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ALKALOIDS OF RARE PLANTS BELONGING TO THE CATEGORY COCCULUS, MAGNOLIA AND ANNONA

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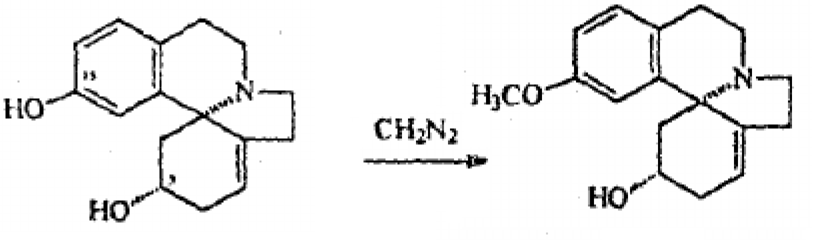

Koklafin **Koklafinin**

Tashkent – 2021

ACADEMY OF SCIENCES OF THE REPUBLIC OF UZBEKISTAN
INSTITUTE OF PLANT CHEMISTRY

MINISTRY OF AGRICULTURE OF THE REPUBLIC OF UZBEKISTAN
TASHKENT STATE AGRARIAN UNIVERSITY

REPUBLIC OF UZBEKISTAN
MINISTRY OF HIGHER AND SECONDARY SPECIAL EDUCATION
KARSHI ENGINEERING-IGNISOD INSTITUTE

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Y. XIDIROVA

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ALKALOIDS OF RARE PLANTS BELONGING TO THE CATEGORY COCCULUS, MAGNOLIA AND ANNONA

Monograph

Scientific-researchers, high-level students of universities
and for Masters

Tashkent - 2021

This monograph is devoted to the study of the chemistry of erythrine alkaloids introduced into the conditions of Uzbekistan by the scientists of Cocculus laurifolius DC and FA Botanical Garden of the Republic of Uzbekistan (climatized), purified from medicinal, rare plants, and the results of scientific research carried out by researchers and authors in the field of alkaloid chemistry for many years have been In the scientific paper, the authors described the separation of alkaloids from plants, their identification, the identification of chemical structures of new alkaloids using modern physico-chemical tests (UB-, IR-, PMR - and mass-spectroscopy methods) and fine chemical reactions.

This scientific booklet is an important scientific and literary resource for scientific staff engaged in chemistry of natural compounds , high-level students of universities and Masters.

Reviewers:

O. Nigmatullaev - O‘zRFA academic S. Yu. Head of the Laboratory of Medicinal and Technical Plants of the Yunusov Institute of Plant Chemistry, Candidate of Biological Sciences.

A.Qodirov – Head of the Department of Chemistry, Karshi State University, Candidate of Chemical Sciences.

This Monograph is my dear teachers
World famous alkaloid chemistry school
created by the Hero of Labor, Academician Sabir Yunusovich
Yunusov and Professor Abdulatif Abdusamatov
dedicated to the bright memory.

Academician Sobir Yunusovich Yunusov (1909-1995)

■ **S. *Yu. Yunusov*** *– Academician of the Academy of Sciences of the Republic of Uzbekistan (1952), Hero of Labor (1969), winner of the Mendeleev International Gold Medal (1971), Honorary Member of the Leopold Academy of German Naturalists O'zFA Founder and Director of the Institute of Plant Chemistry (1958-1983). He was posthumously awarded the Order of Merit (2002) and O'zFA The Institute of Plant Chemistry is named after him.*

- ***Academic S. Yu. Yunusov*** *and his students isolated more than 1,000 alkaloids in pure form from medicinal plants growing in Central Asia, especially in Uzbekistan, more than 600 of which were new alkaloids unknown to science, and their chemical structure was determined. By comparison, one in ten (1/10) of all alkaloids detected in the world S. Yu. Found by Yuyusov and his students.*
- ***S. Yu. Yunusov*** *Under his leadership, about 20 doctoral and more than 100 candidate dissertations were defended.*

Professor Abdulatip Abdusamatov (1932 – 2011)

Professor Abdulatip Abdusamatov was born in 1932 in Tashkent. From 1949 to 1954 he studied at the Tashkent Pharmaceutical Institute. He worked as a pharmacist in pharmacies for several years. 1957-1974 O‘zFA He is a graduate student, junior and senior researcher at the S. Yunusov Institute of Plant Chemistry. He received his Ph.D. in chemistry in 1963 and his doctoral dissertation in 1972.

For many years he worked at the Tashkent State Agrarian University as the head of the department, dean of the faculty and professor of the department. He has published 4 textbooks, 36 manuals and more than 120 scientific articles. Under his leadership, 2 doctors of sciences and 8 candidates of sciences were trained.

Professor A. Abdusamatov, as a highly qualified teacher and a talented, mature scientist in the field of chemistry of natural compounds, has made a worthy contribution to the education and upbringing of young people with his strength and knowledge.

For many years of fruitful work he was awarded the Certificate of Honor of the Republic of Uzbekistan, the title of "Honored Youth Coach of the Republic of Uzbekistan", "Excellence in Education".

FOREWORD

This monograph is an integral part of many years of purposeful research in alkaloid chemistry conducted by the Laboratory of Alkaloid Chemistry of the Institute of Plant Chemistry of the Academy of Sciences of the Republic of Uzbekistan and the Department of Physics and Chemistry of Tashkent State Agrarian University. Cocculus laurofolis and some rare trees introduced at the Tashkent Botanical Garden, dedicated to the study of the chemistry of aporphinoids and erythrin alkaloids isolated from plants.

The tested Cocculus laurifolius plant is very rich in alkaloids and was discovered in 1950 by academician S. Yu. Yunusov studied the alkaloids of this plant and isolated 2 new alkaloids. So far, about 50 alkaloids belonging to different groups have been isolated.

Republic of Uzbekistan FA Alkaloids of more than 60 species of rare and medicinal plants belonging to the flora of North America, the Far East and Kavraz, introduced to the conditions of Uzbekistan by the scientists of the Botanical Garden, were studied for the first time in terms of quality and quantity. was found to be an alkaloid-preserving plant.

The author of the monograph was the first to study the alkaloids of a number of plants belonging to the flora of Central Africa, including Annona muricata L, Annona, senegalensis Rers, Xylopia aethopica A. Rich, during his working trip to the Republic of Guinea (Africa). The scientific pamphlet provides information on benzyl tetrahydroisoquinoline and aporphinoid alkaloids isolated from these plants.

The main task of this booklet is to isolate alkaloids from the above plants in pure form, to study their physicochemical properties, spectral characteristics, to identify certain alkaloids isolated, to determine the structure of new ones, to describe the methods of synthesis of a number of alkaloids .

The monograph is an important scientific and literary resource for researchers, doctoral students, as well as university students and masters in the field of chemistry of biologically active plant substances (natural compounds).

The author is the Republic of Uzbekistan, which has expressed its valuable views and opinions in writing this scientific pamphlet FA Professor Salimahon Fazilovna Oripova, Doctor of Chemical Sciences, Senior Research Fellow, Laboratory of Chemistry of Alkaloids of the Institute of Plant Chemistry.

INTRODUCTION

Decree of the President of the Republic of Uzbekistan "On measures for the protection, cultivation, processing and rational use of available resources of wild-growing medicinal plants" (PQ-4670 10.04.2020y.) and "On measures to expand the scope of scientific research on the cultivation and processing of medicinal plants, the development of their seed production" (PQ-4901 26.11.2020y.) to create a favorable environment for further development of cultivation and processing of medicinal plants, increase the export potential of the industry, as well as the integration of education, science and production processes and the development of scientific research on cultivation and processing of medicinal plants in the country. Measures have been identified to create a database, study the advanced scientific developments of foreign countries, establish cooperation with leading scientific institutions, introduce modern technologies, scientific developments in the country and strengthen the effective use of existing opportunities. In recent years, the country has been carrying out consistent reforms in the field of protection of medicinal plants, rational use of natural resources, the establishment and processing of plantations for the cultivation of medicinal plants.

Of the more than 4,300 plants of the local flora, 750 species are medicinal, of which 112 species are registered for use in scientific medicine, of which 70 species are actively used in the pharmaceutical industry.

In 2019, $ 48 million worth of processed medicinal plant products were exported.

At the same time, the analysis shows the need to create a value chain through the protection of medicinal plants, the establishment of their plantations, processing..

I – CHAPTER

ON COCCULUS LAUROFOLIUS ALKALOIDS

REVIEW OF SCIENTIFIC LITERATURE

1.1. Cocculus laurofolius DC plant alkaloids

Plants belonging to the family Cocculus belong to the family Menispermaceae, which includes more than 30 species. These are the typical alkaloid-preserving plants, Cocculus laurofolius DC an ornamental tree with laurel leaves. Its alkaloids are well studied in our country and abroad.

All parts of the plant contain essential oil, which contains (9.42-10.6%) esters, (13.45%) alcohols, (3%) phenols, (4%) carbonyl compounds, a mixture of sineol, citral and sesquiterpenes, rutin and (0.24%) other glycosides. Magnofluorine from bark; essential oil in the flower (16%), essential oil in the fruit (42.5%), which contains myristic, stearic, arachic, oleic and linoleic acids. Salicyfoline and candidin were isolated from the root.

In addition, the following is stored on the leaf:

With macronutrients (mg/g) - K- 11,7, Ca- 13,0, Mg – 1,4, Fe- 0,2;

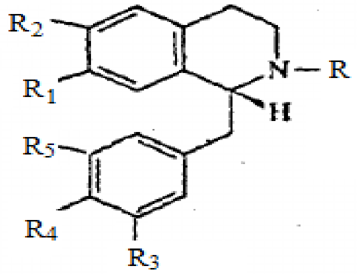
Trace elements (mkg/g) – Mn- 32,1, Cu – 11,9, Zn – 26,5, Co- 1,28, Cr- 0,32, Al- 111,4, Se- 0,28, Ni- 0,64, Pb- 2,8.

In 1950, Cocculus laurofolius *DC* plant alkaloids are among the first academic S. Yu. Two new alkaloids coculin (27) and coculidine (28) were isolated from the leaves of this plant, which was studied by Yunusov and collected from the Botumi Botanical Garden (Republic of Abkhazia) [1,2]. The physical and chemical properties of these new alkaloids, as well as their spectra, have been studied over several years to determine their structure and absolute configurations [3 - 6].

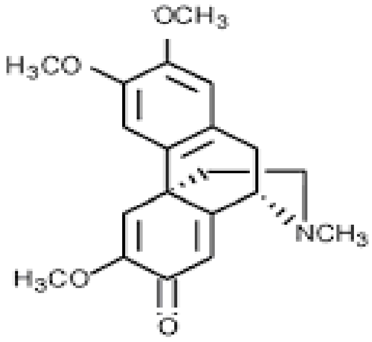
So far, about 50 alkaloids belonging to the groups of benzyl tetrahydroisoquinoline, morphinandienone, bisbenzylisoquinoline, proaporphine, aporphine, dibenz [d, f] azosine and erythrin have been isolated from this plant.

Table 1

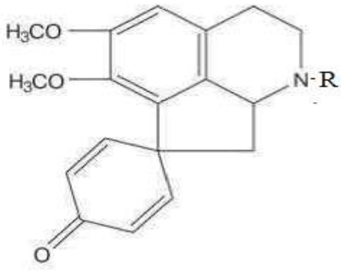
Cocculus laurofolius DC alkaloids

№	The name of the alkaloid	Structure	Literature
1	2	3	4
	I. Benzyl tetrahydroisoquinolines		1- 5
1.	Koklaurin	$R = R_3 = R_5 = H$; $R_2 = OCH_3$; $R_1 = R_4 = OH$	7, 8, 14
2.	N – methylcoclaurine	$R = CH_3$; $R_3 = R_5 = H$; $R_2 = OCH_3$; $R_1 = R_4 = OH$	9,15
3.	Retikulin	$R = CH_3$; $R_1 = R_5 = OH$; $R_3 = H$; $R_2 = R_4 = OH$	10
4.	Laudanidin	$R = CH_3$; $R_1 = R_2 = R_4 = OCH_3$; $R_3 = H$; $R_5 = OH$	11
5.	Cochlanolin	$R = CH_3$; $R_2 = R_3 = OCH_3$; $R_1 = R_4 = OH$; $R_5 = H$	10

II. Morphinandienone

6.	Sebiferin (O – metilflavinantin)		12

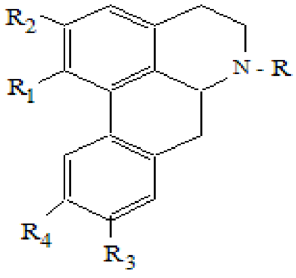
III. Proaporphins



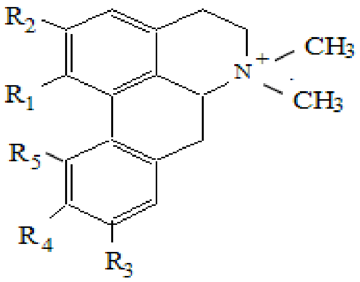
7 – 8

7.	Stefarin	R = H	11
8.	N – methylstefarin	$R = CH_3$	11

IV. Aporphins



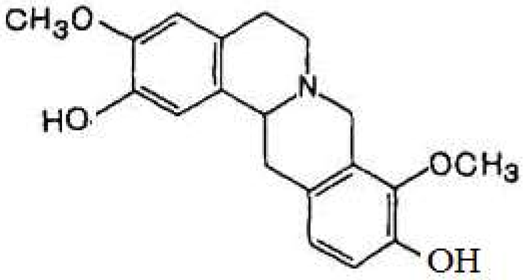
9 - 12



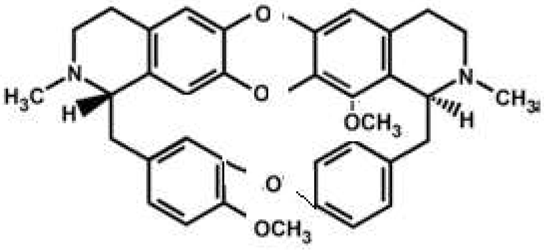
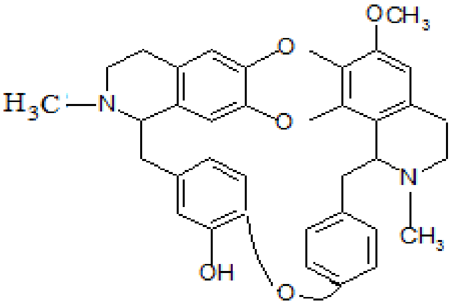
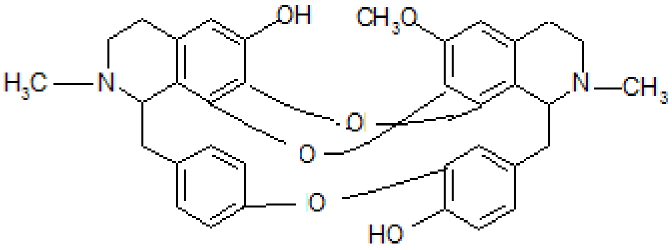
13 - 17

9.	Norizoboldin	$R = H; R_1 = R_3 = OH; R_2 = R_4 = OCH_3$	13
10.	Isoboldin	$R = CH_3; R_1 = R_3 = OH; R_2 = R_4 = OCH_3$	13
11.	Boldin	$R = CH_3; R_2 = R_3 = OH; R_1 = R_4 = OCH_3$	8
12.	Disentrin	$R = CH_3; R_1 + R_2 = O_2CH_2; R_3 = R_4 = OCH_3$	11
13.	Laurofolin	$R_1 = R_3 = OH; R_2 = R_4 = OCH_3; R_5 = H$	11, 14
14.	N – metilboldin	$R_2 = R_3 = OH; R_1 = R_4 = OCH_3 ; R = H$	11,14
15.	Magnoflorin	$R_1 = R_5 = OH; R_2 = R_4 = OCH_3 ; R = H$	14,15
16.	Menisperin (N – metilizokoridin)	$R_3 = H; R_5 = OH; R_1 = R_2 = R_4 = OCH_3$	14
17.	Tilizokoridin	$R_3 = H; R_1 = R_2 = R_4 = R_5 = OCH_3$	14

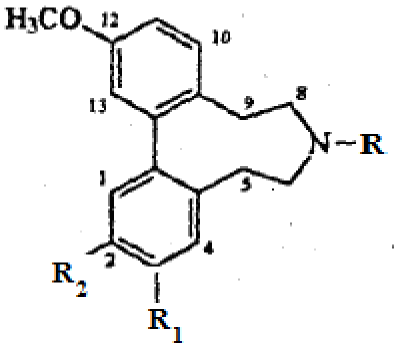
V. Tetragidroprotoberberin

18.	Stefolidin		16-17

VI. Bisbenzylisoquinolines

19.	Trilobin		8
20.	Coxulin		18
21.	Coxulinin		19

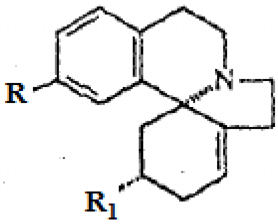
VII. Dibenz [d,f] azosins



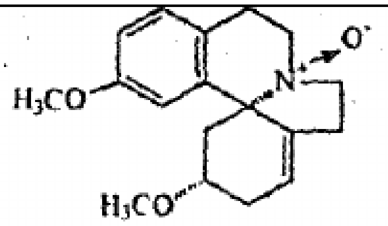
22 – 26

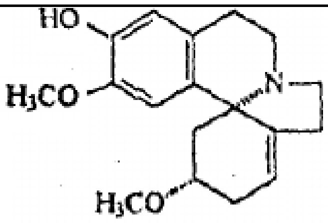
22.	Koklaurifin	$R = R_1 = H$; $R_2 = OCH_3$	20
23.	N - methylcoclaurifine	$R = CH_3$; $R_1 = H$; $R_2 = OCH_3$	20
24.	Laurifonin	$R = CH_3$; $R_1 = R_2 = OCH_3$	21-23
25.	Laurifin	$R = H$; $R_1 = R_2 = OCH_3$	21 – 23
26.	Laurifinin	$R = CH_3$; $R_1 = OH$; $R_2 = OCH_3$	21 – 23

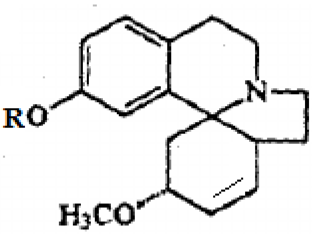
VIII. Erythrin alkaloids



27 - 30

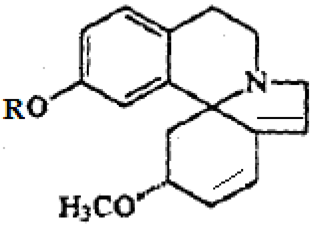
27.	Kokulin	$R = OH$; $R_1 = OCH_3$	3 – 6
28.	Kokulidin	$R = R_1 = OCH_3$	3 – 6
29.	Koklafin	$R = R_1 = OH$	13
30.	Koklafinin	$R = OCH_3$; $R_1 = OH$	26
31.	Kokulidin N-oxide		20,24-25

32.	Digidroerizodine		11



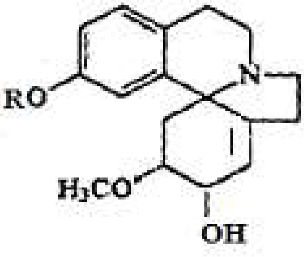
33 - 34

33.	Izokokkulin	R = H	11
34.	Isococculidine	R = CH_3	23, 27



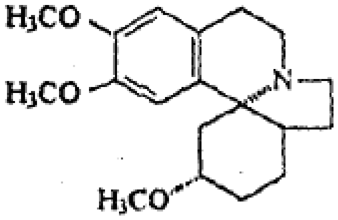
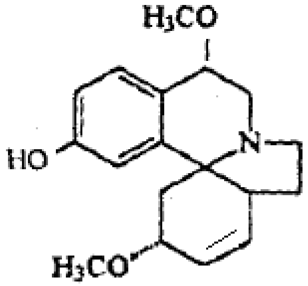
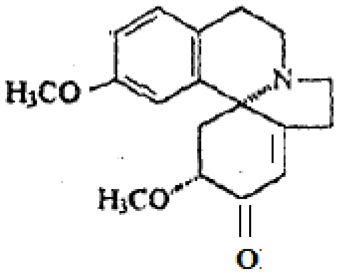
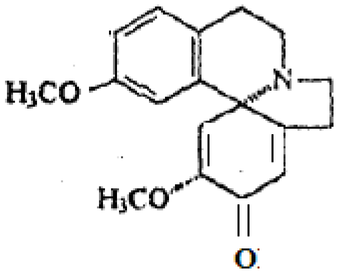
35 - 36

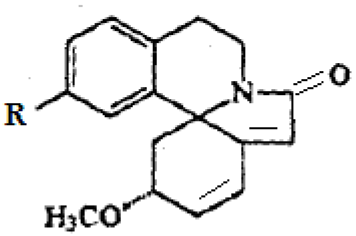
35.	Kokkuvin	R = H	28
36.	Kokkuvinin	R = CH_3	11



37 - 38

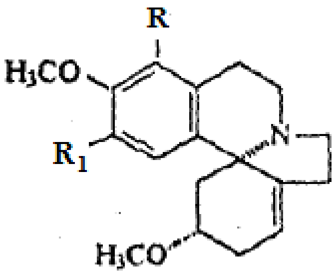
37.	Kokkulitin	R = CH_3	29
38.	Kokkulitinin	R = H	11, 29

39.	Tetragidroerizotrin		30
40.	Cocculidinone		11
41.	Kokkudienon		11
42.	Kokkudienon		11

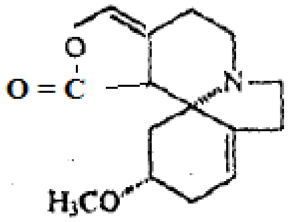


43 - 44

43.	Kokkolin	R = OH	23, 31
44.	Kokkolinin	R = OCH_3	31



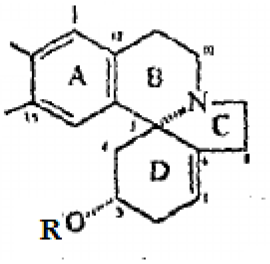
45 – 47

45.	Erythroculin	R = H: R_1 = $COOCH_3$	30, 32
46.	Erythlaurine	R = OH; R_1 = $COOCH_3$	16, 33
47.	Erythramide	R = H; R_1 = $CONH_2$	16, 33
48.	Cocculolidine		34

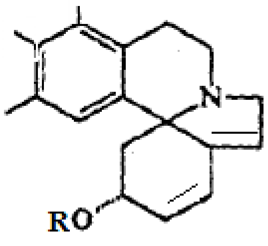
We are Cocculus laurifolius DC. we isolated from the plant leaf 3 new alkaloids belonging to the erythrin group, such as coclafin (29), coclafin (30) and coculidine N-oxide (31). Therefore, below is a brief overview of erythrin alkaloids.

1.2. Erythrin alkaloids

So far, more than 20 erythrin alkaloids have been isolated from the Cocculus laurifoluis DC plant, which are mainly divided into the following two groups:

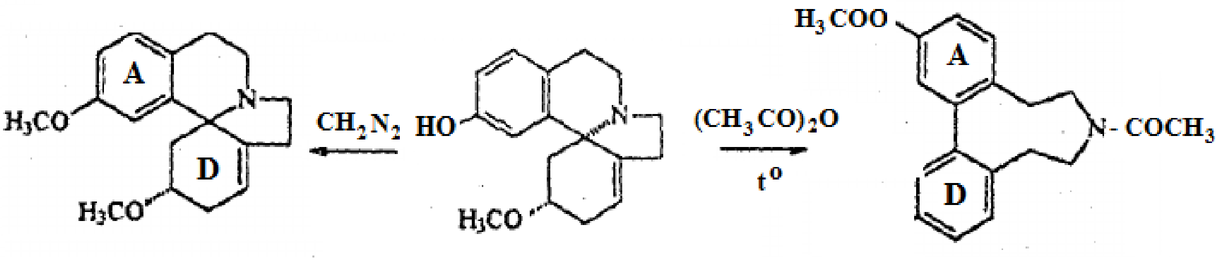


A



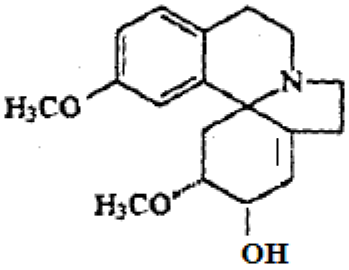
B

Erythrin Δ$^{1(6)}$ en alkaloids (A). The first representatives of erythrin alkaloids belonging to this series are coculin (27) and coculidine (28) [3-6]. Boiling cochulin in diazomethane methyllable coculidine (28), acetic anhydride formed O.N-diacetyldibenzo [d, f] azosine [4 - 6].



28 **27**

Since these alkaloids are the main alkaloids of the plant Cocculus laurifolius, their chemical, spectral [3-6], and pharmacological properties [35] have been extensively studied. X-ray structural analysis revealed the structure and absolute configuration of the cochlea [5].



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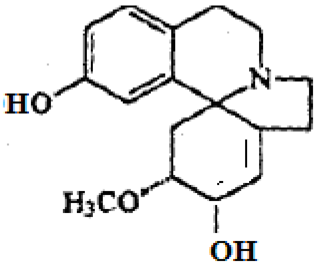

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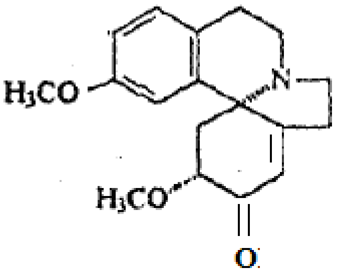
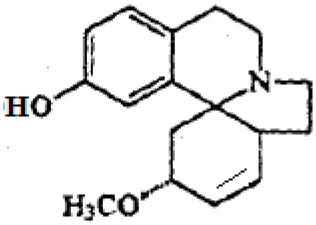
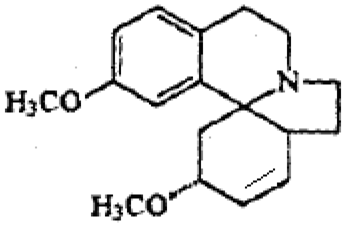


41

Cocculitin (37) and cocculitin (38) are the most alkaloids in the C-2 case, hydroxyl, and cocculidinone (41) is the first erythrin D1 (6) in the carbonyl group.



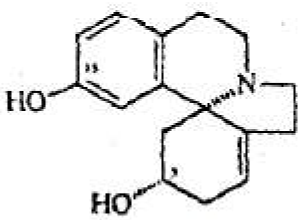
33



34

The alkaloids isococculin (33) and isococulidine (34) have the same functional groups as coculin and coculidine, and their order of arrangement is the same, but in isococulin and isococulidine the double bonds are located on the carbon atoms C -1 and C-2, that is, erythrin is D1 (2) [11, 27].

Cocclafin (29), coclafin (30), coculidine N-orsides (31) isolated from us by the plant Cocculus laurifolius also belong to the erythrin $D^{1(6)}$ line, and coclafin is the first coculidine to hold hydroxyl in the C - 3 state. N-oxide is the first N-oxide alkaloid [13, 37].



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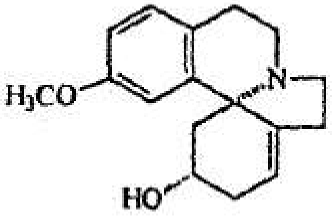

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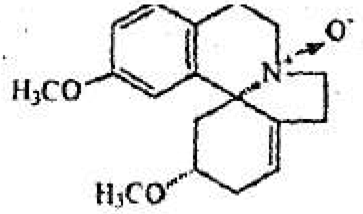
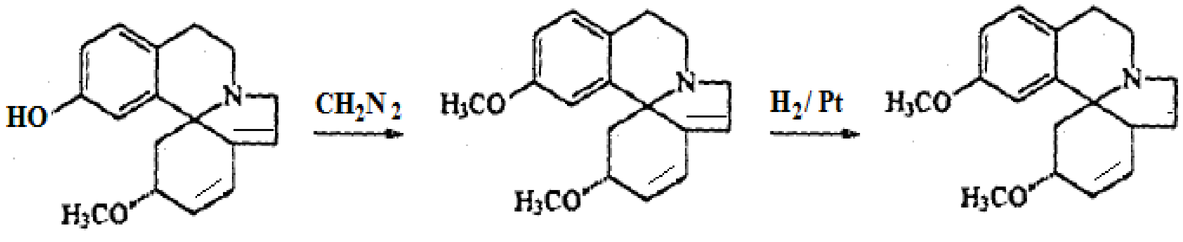


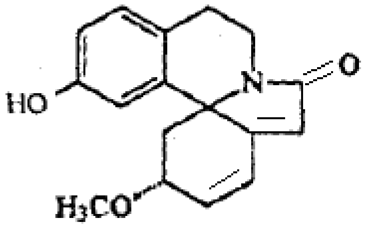
31

Erythrin 1,6 – dien alkaloids (B). There are about 30 of these species in the plant kingdom alkaloids have been found, and coccuvin (35) and coccuvin (36) isolated from the plant C. laurifolius are the first erythrin alkaloids of the 1,6-diene series. Coccuvin was converted to methyllable coccuvinine (36) in diazomethane, and 36 to hydrogenated isococculin along Adams [11, 28]..



35 36 34

Coccolin (43) and coccolin (44) are erythrin bases of the 1,6-diene series, which contain the carbonyl group in the C-8 state [23, 31].



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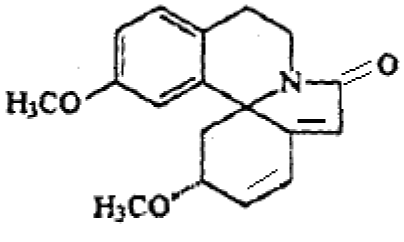

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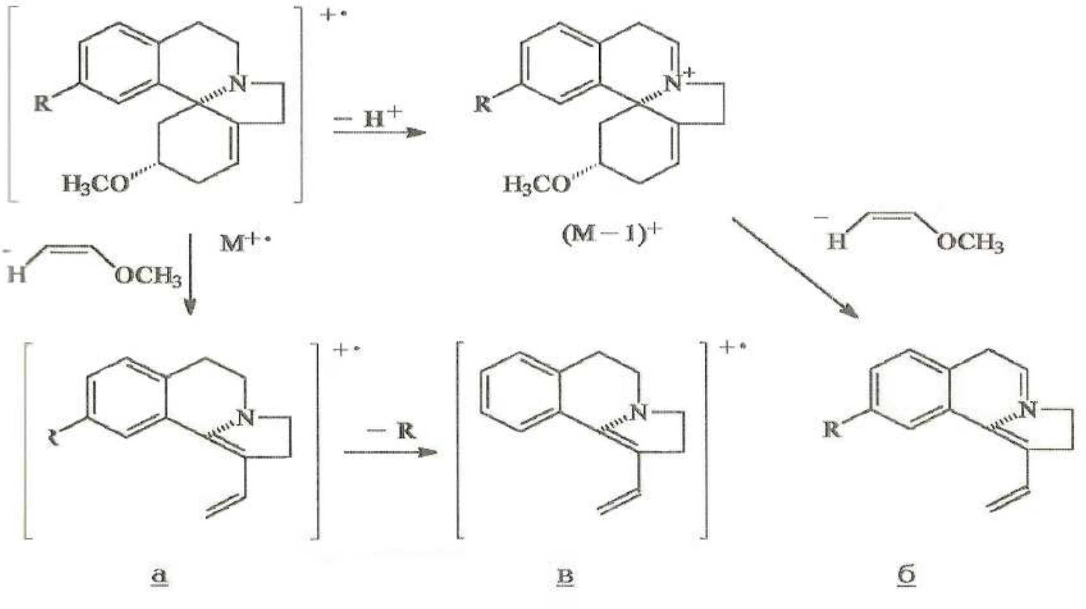
Modern physical methods are widely used to determine the structure and absolute configurations of erythrin alkaloids.

In the UV spectrum of erythrin $D^{1(6)}$ most alkaloids, a single absorption maximum is observed at 230 - 240 nm. The erythrin bases in the 1,6-diene series show two: double-bond absorption peaks at 230–235 (diene) and 285 nm, and in the IR spectrum at 1610 cm-1 [36].

The mass spectra of erythrin alkaloids have been extensively studied [36-37]. The study of the mass spectra of cochulin (27) and coculidine (28) proved their structure [3, 4]. In the mass spectrum of these alkaloids fragments a and b are observed as a result of retrodiene decomposition of M + and (M - 1) + ions. From these fragments, ions are formed as a result of the cleavage of the R radical in the aromatic ring. (Figure 1).

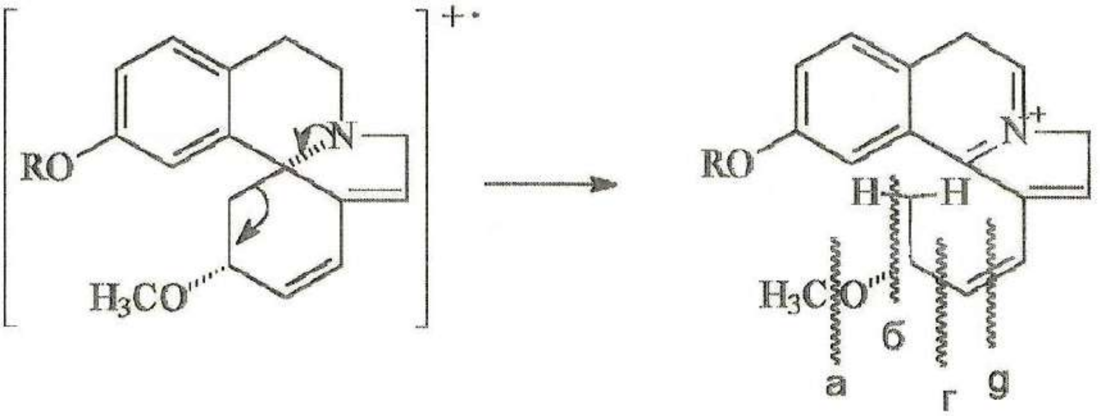
The decomposition of a molecular ion into such fragments is characteristic of all erythrin D1 (6) en alkaloids [36, 38].



Scheme 1. **Erythrin $\Delta^{1(6)}$ mass of most alkaloids – spectroscopic Fragmentation.**

Fragments of the mass spectra of alkaloids belonging to the erythrin 1,6-diene series are shown in Figure 2 on the example of coccuvin (35) and coccuvin (36). The following are in the mass spectra of these alkaloids $(M - 15)^+$ ***a***; $(M - 31)^+$ ***б***; $(M - 32)^+$;

$(M - 58)^+$ **г**; $(M - 71)^+$ **g** intense ion peaks are observed [28, 34].



Scheme 2. **Erythrin 1,6 – mass of diene alkaloids – spectroscopic Fragmentation.**

Data from their PMR spectra play an important role in determining the structure and absolute configuration of erythrin alkaloids. The PMR spectra of these alkaloids have been studied in depth and a number of generalized scientific articles have been published. [23, 39-40].

II – CHAPTER.

COCCULUS LAUROFOLIUS DC PLANT TESTING ALKALOIDS

Cocculus laurifolius DC is a typical alkaloid-bearing tree plant in the Menispermaceae family. This plant is mainly found in India, Japan and southern China. It is grown as an ornamental tree in the Black Sea, Crimea and the Caucasus [41].

2- table

2.1. Cocculus laurifolius alkaloids

№	Alkaloid	Composition	Liquid.t. ^{o}C	$[\alpha]_D^{o}$
I. Benzil tetragidroizoxinolin				
1.	Koklaurin (1)	$C_{17}H_{19}NO_3$	218 – 220	+ 13 (spirt)
II. Aporfinlar				
2.	Norizoboldin (9)	$C_{18}H_{19}NO_4$	192 – 194	+ 42 (spirt)
3.	Izoboldin (10)	$C_{19}H_{21}NO_4$	123 – 125	+ 54 (xloroform)
III. Dibenzo [d, f] azozinlar				
4.	Koklaurifin (22)	$C_{18}H_{21}NO_2$	119 – 121	
5	N – methylcoclaurifine (23)	$C_{18}H_{23}NO_2$	Amorf	
IV. Erythrin alkaloids				
6.	Kokulin (27)	$C_{17}H_{21}NO_2$	215 – 217	– 270 (methanol)
7.	Kokulidin (28)	$C_{18}H_{23}NO_2$	84 – 86	+ 250 (xloroform)
8.	Koklafin (29)	$C_{16}H_{19}NO_2$	264 – 266	+ 255 (methanol)
9.	Koklafinin chloride (30)	$C_{17}H_{21}NO_2 \cdot HCl$	236 – 238	+ 240 (spirt)
10.	Kokulidin N – oxide (31)	$C_{18}H_{23}NO_3$	152 – 154	+ 245 (methanol)

Information on the alkaloids Cocculus laurifolius DC is given in Chapter I of this pamphlet. We obtained a mixture of 0.78% (relative to the mass of the right *plant) alkaloids as a result of the usual chloroform extraction from the leaves of this plant collected from Kobuletti.*

***1- picture.* Cocculus laurofolius DC**

A total of 10 alkaloids were obtained from this mixture of alkaloids by phenolic and non-phenolic fractions, repeated chromatography in a silica gel column, and recrystallization in appropriate solvents: coclaurin (1), norizoboldin (9), boldin (10), cochulin (27), coculidine (28) and 5 new alkaloids: isolated coclafin (29), coclafin (30), coculidine N-oxide (31), coclaurifine (22) and N-me-tilcoclaurifine (23) and determined the chemical structure of the new alkaloids [13, 20, 43In Table 2, the composition of the alkaloids found by us, the temperature of liquefaction, $[\alpha]_D$ listed

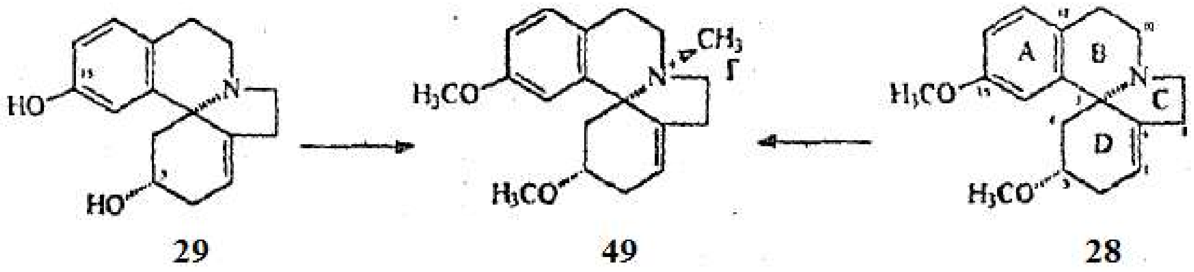
2.2. The structure of coclafin

Koklafin (29) $C_{16}H_{19}NO_2$ content, phenolic nature, liquid. t. 264 - 266o C is a crystalline substance that dissolves poorly in ordinary solvents and well in alkalis. In its UV- spectrum λ_{max} 208, 230, 285 nm (lgε 4,30; 3,71; 3,41) absorption peaks are observed, and the IR spectrum is hydroxyl in the molecule (- OH) indicates the presence of a group. In the mass spectrum of coclafin, along with the peak of the molecular ion (M^+ 257), the following m/z 240 $(M - 17)^+$, 213 $(M - 44)^+$, 212 $(M - 45)^+$, 196, 150 ion peaks characteristic of erythrin alkaloids are observed.

Olefin in the PMR spectrum of the alkaloid (29) (5,58 m.x., 1H, wide singlet; $J_{1,2}$= 7 gts) and three aromatic (6,54m.x., 1H, wide singlet; 6,58 m.x., 1H, J_1 = 8,0 gts and J_2 = 3,0 gts quartet and 6,92 m.x. da 1H; j = 8,0 gts doublet) proton signals are displayed.

Comparing the IR -, PMR - and mass - spectra of coclafin (29) with coculin (27), it is easy to determine that they belong to the same group, differ from each other by 14 units of mass, and that erythrin $D^{1\,(6)}$ is the largest of the two hydroxyl groups. [3].

In fact, methyl iodide in the presence of sodium hydride dissolved in "dry" dioxane with methyl iodide to form iodethylate O, O ′ - dimethylcoclafin, which is the same substance (according to IR -, YUX) as the iodmethylate of coculidine (49):



Shunday qilib, yuqorida keltirilgan ma’lumotlar asosida koklafin -3S, 5R-3,15-digidroksieritrin $\Delta^{1(6)}$ en (29) tuzilishga ega ekanligini aniqladik [13].

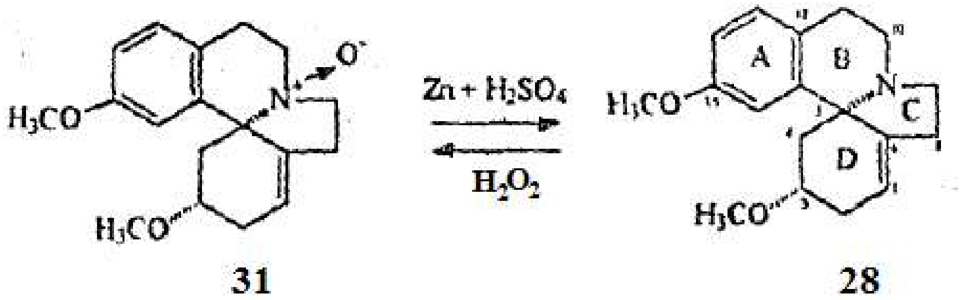
2.3. Coculidine N - oxide and colafinin structures

Kokulidin N-oxide $C_{18}H_{23}NO_4$ (31), liquid. t. 150 – 152^{o} C (acetone), is an optically active substance that is poorly soluble in ordinary solvents and well soluble in water.

This is due to the good solubility of the alkaloid in water, the weakness of the intensity of the molecular ion in the mass spectrum, as well as $(M – 16)^+$, $(M – 17)^+$, $(M – 18)^+$ the presence of ions indicates that it is a natural base of N-oxide [42-43].

In fact, 31 was returned to Zn in a 10% sulfuric acid solution to form a base (28) identical to coculidine (in terms of IQ and YuQX).

Similarly, about the first base (31) -coculidine N-oxide found in the plant, previously it was necessary to oxidize coculidine with hydrogen peroxide (H_2O_2), academician Yunusov S. Yu. re-created [24].



Koklafinin $C_{17}H_{21}NO_2 . HCl$ (30) is isolated as a hydrochloride and is a liquid. t. 234 – 236° C, $[\alpha]_D$ + 240° (c 0,15; methanol). Its UV spectrum is similar to that of coclafin and cochulin, while the IR spectrum shows a maximum absorption of the hydroxyl group (3400 - 3435 cm^{-1}).

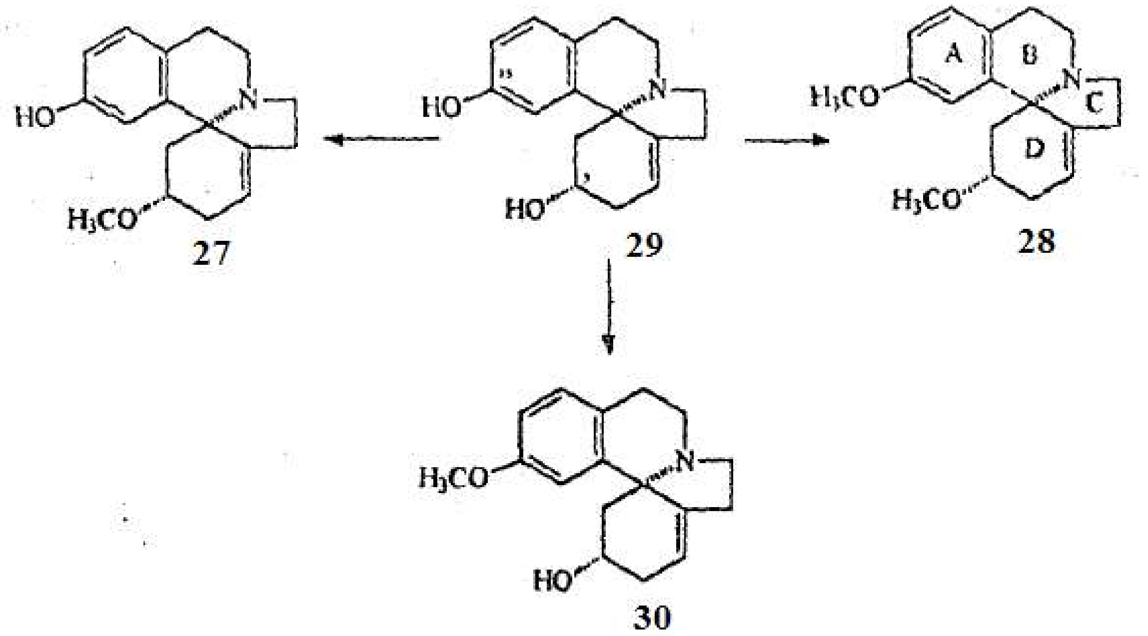
A comparative study of the PMR spectra of colafinin and colafin showed that the nature of the olefins and aromatic protons in their spectra was the same, while that of colacinin was supplemented with methoxyl (3,58 m.x., 3H, singlet) we found that the group had a signal. Ionic peaks characteristic of erythrin alkaloids in the mass spectrum of cochlafin (30) m / z: 271 (M^+), 270, 256, 227 $(M – 44)^+$, 226 $(M – 45)^+$, 212, 196 observed [3, 5].

Based on the spectral characteristics of the above 30, it is easy to see that it belongs to the group of cis-erythrin $D^{1\ (6)}$ alkaloids, such as coculin, coclafin, isomeric base with coculin, and differs from coclafin - CH_3 group.

In fact, methylation of coclafin (29) with an ether solution of diazomethane resulted in a mixture of three bases: 27, 28, and 30. A mixture of these alkaloids was chromatographed on a silica gel column to isolate cochulin (27), coculidine (28), and coclafinine in pure form. Thus, we found that colafin - 3-hydroxy-15-methoxyeritrin $D^{1\ (6)}$ has the most structure.

The presence of intense peaks in the mass spectrum of cochlafin with m / z 227 $(M - 44)^+$ (100%), 226 $(M - 45)^+$ determines the structure of 30, i.e. proves once again that the hydroxyl group is located. These ion peaks correspond to the a and b retrodiene fragments formed by the separation of molecular particle

$[CH_2 = CHOH]^{+\cdot}$ from M^+ and $(M - 1)^+$ ions. The decomposition of M^+ ions in these directions is characteristic of erythrin alkaloids [6, 36].



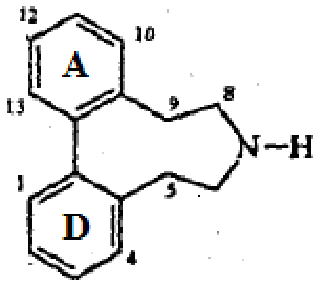
2.4. Coclaurifin N - methylcoclaurifinin Structures

Koklaurifin $C_{18}H_{21}NO_2$ (22) is an optically inactive, secondary amine with a maximum absorption of two in the UB spectrum.: 222, 284 nm (lgε 4,30; 3,91) observed,

The IR spectrum confirms the presence of a secondary amino group> NH in the molecule. The mass spectrum of 22 shows 283 (M^+) (100%), 286 $(M - 15)^+$, 240 $(M - 43)^+$, 226, 225, 211, 195, 181, m^{*+} 141.5 ion peaks 'ladi.

Indications of the above spectra of cochlaurifine indicate that it belongs to the alkaloids of the dibenzo [d, f] azosine group isolated from this plant by Japanese scientists [21-22], that the molecule of 22 contains two methoxyl and secondary amino groups, and that allows you to express the formula:

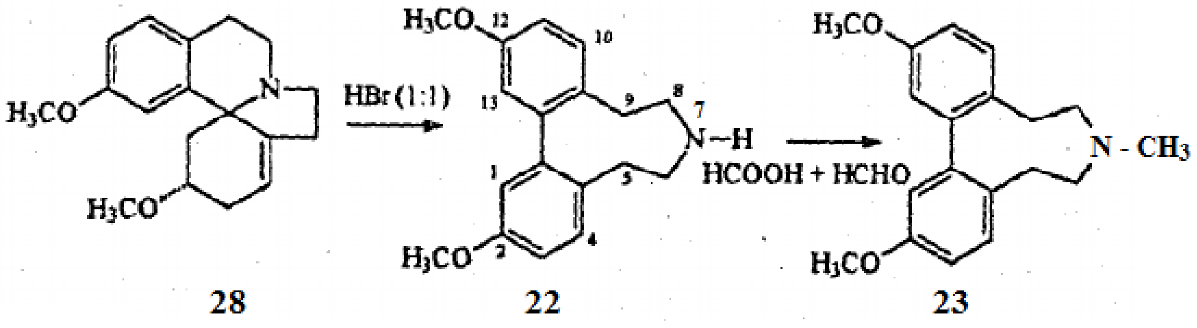
$$C_{16}H_{14}(- OCH_3)_2(>NH)$$



Boiling coculidine (28) in a solution of bromide acid (1: 1) for 2 h to determine the presence of coclaurifine (22) among the reaction products. The formation of 22 under the action of HBr at high temperatures can be thought of as a result of the breaking of the C5 - N bond in the coculidine molecule and the dehydrogenation of the six-membered cyclohexene D ring. Thus, based on the above evidence, we found that coclaurifine - 2,12-dimethoxy 7-demethyl - 6,7,8,9-tetrahydro 5H-dibenzo [d, f] has the structure of azosin.

N – methylcoclaurifine $C_{19}H_{23}NO_2$ (23) is a tertiary base, the spectral characteristics of which are similar to those of coclaurifine, except that this base differs from coclaurifine by the presence of a group of> N - CH_3 in the molecule. In fact, we found that the reaction product of methylation of coclaurifine by the Gess method (85% HCOOH + 30% HCHO) was exactly the same as 23 (YuQX, IR - spectrum).

Thus, the new alkaloid (23) is N-methylcoclaurifine, which has the structure of 1,12-dimethyl 7-methyl 6,7,8,9 - tetrahydro 5H - dibenzo [d, f] azosine.



III – CHAPTER. *ALGALOIDS OF PLANTS OF THE MAGNOLIA family*

The Magnolia family belongs to the Magnoliaceae family and includes about 70 species. They are typical alkaloid-preserving plants and are common in North America and Southeast Asia. It is widely grown as an ornamental plant on the Black Sea coast, in the Crimea, the Caucasus and Ukraine, Latvia (Jurmala). [41, 81-83].

Scientists of the Botanical Garden of the Academy of Sciences of the Republic of Uzbekistan have adapted several rare and medicinal species of this plant to the conditions of Uzbekistan and developed methods of reproduction. [82]. Now it is widely grown in the alleys of the central cities of the republic.

Alkaloids of the Magnolia family were first studied in 1939 under the name of N. F. Proskurnina and A. P. Orekhov. They identified two new bisbenzylisoquinoline alkaloids: magnolin and magnolamines, which were found to contain a 1-2% alkaloid mixture in the leaves of Magnolia fuscata introduced in nurseries of the All-Union Institute of Botany in Sukhumi. [83].

The alkaloids benzylisoquinoline, aporphine, and bisbenzylisoquinoline were then isolated from several species of the Magnolia family. [84-85].

Quantitative study of the dynamics of the accumulation of alkaloids in the vegetative growth periods of 6 species of Magnolia plants introduced in the Botanical Garden of the Academy of Sciences of the Republic of Uzbekistan (*3-jadval*). The study revealed the presence of alkaloids in all organs of the studied plants [46,47,70].

0.096 - 0.23% in young branches of all Magnolia plants, a small amount of alkaloid mixture in the yellowing leaves in autumn (0.925 -
0.048%), and naturally shed yellow leaves showed traces of alkaloids [46- 47].

3- table

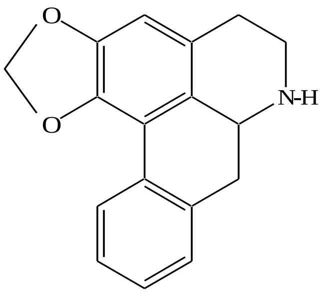
3.1. Alkaloids in various parts of the Magnolia family the sum of the sums

№	A plant type	A plant member	Vegetation period	Alkaloid amount (%)	Extracted Alkaloids
1	*2*	*3*	*4*	*5*	*6*
1	*M.soulangeana Soul-Bod*	leaf	leaf maturation	0,125	anonain remerin
	- // -	green leaf	leaf fall davri	0,095	remerin, liriodenin
	- // -	yellowing leaves	- // -	0,028	remerin, liriodenin
	- // -	a naturally shed blood leaf	- // -	izi	
	- // -	with the bark of a young branch	- // -	0,14	remerin, liriodenin, oksolaurelin
2	*M. kobus DC*	leaf	full maturity of the leaf	0,31	remerin, liriodenin, asimilobin, seringarezinol
	- // -	Green leaf	leaf fall period	0,16	remerin, anonain, liriodenin, lanuginozin, isolaurelin N-oksidi.
	- // -	yellowing leaves	- // -	0,105	
	- // -	natural shed leaf	- // -	0,018	
	- // -	with the bark of young twigs	leaf fall period	0,12	
3.	*M. denudata Desz*	Green leaf	leaf fall perio	0,10	
	- // -	Yellow leaf	- // -	0,035	

	- // -	natural shed blood yellow blood leaf	end of leaf fall	izi	
	- // -	with the bark of young twigs	leaf ‘maturity’ period	0,14	
	M. grandi flora L	Green leaf	full maturity of the leaf davri	0,58	remerin, liriodenin
	- // -	with the bark of young twigs	- // -	0,23	Liriodenin
5,	*M. tripelata L*	Green leaf	leaf maturation period	0,25	
	- // -	Green leaf	leaf fall period	0,115	
	- // -	Yellow leaf	- // -	0,048	
		leaf	full maturity of the leaf	0,115	
6.	*M. stellata Maxim*		full maturity of the leaf		
	- // -	with the bark of young twigs	- // -	0,096	
	- // -	ko‘k barg	leaf fall period	0,085	
	- // -	yellowing leaves	- // -	0,025	
	- // -	a naturally shed yellow leaf	- // -	izi	

3.2. *Magnolia soulengeana alkaloids*

Magnolia soulangeana The study of the alkaloids Soul-Bod yielded anonaine (50) and remerin (51) from its leaves, and anonain, remerin, lyriodenin (52), and fresh oxoaporphine-oxolaurelin (53) from young branches. [87].



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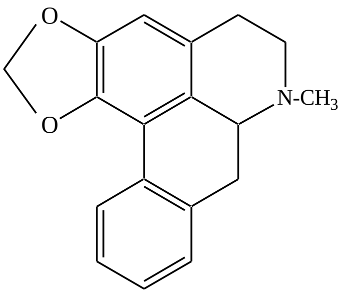

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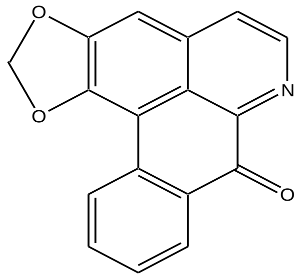


52

Oxolaurelin (53) C18H11NO4 containing, liquid. t. 265 -2 67oC, yellow, crystalline base, soluble in acids, poorly soluble in benzene, chloroform, alcohol, acetone, insoluble in alkalis. Its UB spectrum [λ_{max} 249, 270, 309, 349 nm (lg ε 4,21; 4,08; 3,72; 3,82)]; $\lambda^{Spirt + HCl}$ 259, 280, 370 (lg ε 4,07; 3,99; 3,79) 7-oxodibenzo [de,g] characteristic for quinoline series alkaloids [88-89].

A **B**

2- picture. Magnolia soulangeana Spring of the Soul-Bod plant flowering period (A); flowers with twigs (B)

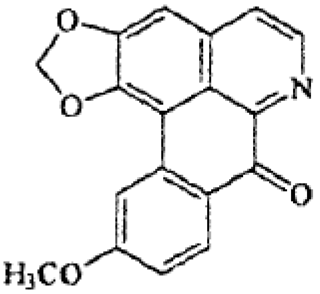
Oksolaurelin (**53**) $S_{18}H_{11}NO_4$ compound, liquid. t. 265 -2 67°C, yellow color, crystal is the basis, good in acids, poorly soluble in benzene, chloroform, alcohol, acetone, insoluble in alkalis. His *UB – spektri* [λ_{max} 249, 270, 309, 349 nm (lg ε 4,21; 4,08; 3,72; 3,82)]; $\lambda^{Spirt + HCl}$ 259, 280, 370 (lg ε 4,07; 3,99; 3,79) 7-oksodibenzo [de,g] Quinoline row is characteristic for alkaloids [88-89].

Of Alkaloid (53) *IQ – across the spectrum* 2850, 1265 sm $^{-1}$ (- OCH_3), 1605 (benzene nation), 1080, 970 (- OCH_2O -) va 1650 sm $^{-1}$ (carbonyl group) absorption maximums become available, - OH and >NH groups specific maximum is not observed. **53** mass of – the spectrum is also 7 – as a characteristic for oksoaporphins, in it, the following intensive ion peaks are manifested: m/z M^+ 305 (100%), 290 $(M – 15)^+$, 275 (M – 30)‘, 262, 234, 206, 176, 175, 149 va m^{++} 152,5.

Alkaloid (**53**) of PMR – methoxyl in spectrum (3,68 m.x,, singlet, 3H), methylendioxide (6,22 m.x., singlet, 2H) groups, as well as the signals of 6 aromatic protons are observed.

Like the spectrum of liriodene in the spectrum of alkaloid 7,16 m.x. single-proton singlet observed in C -3 position in accordance with the aromatic Proton, two single-proton duplicates (8,17 and 8,35 m.x., J = 7,0 gts) while C- 4 va C – 5 belongs to protons in. Analysis of the signals of the remaining 3 protons in the spectrum, that is, one proton stunt 8,05 m.x. (J_{orto} = 8,6 gts); 7,02 m.x. quartet with da Center (J_{orto} = 8,5 gts; J_{meta} = 2,5gts) va 8,45 m.x. signals in 1,2,4 the cases indicate the presence of a benzene ring with 3 seats. From this it is concluded that the methoxyl group is in the D ring and can be in the case of C – 9 or C – 10.

It should be noted that methylendioxin Group C-1 and C-2 are isolated, as well as that this alkaloid is not a homogeneous substance with lanuginosine (73) isolated from the plant Liriodendron tulipifera L [54], axalaurelin: 1,2-methylendioxide -10 - metaxia -7 – oxodibenzo [de,g] quinolin (**53**) it turned out that it has a structure [87].



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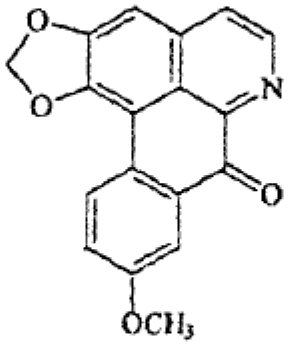

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3.3. *Magnolia nightmare DC alkaloids*

Magnolia kobus DC leaves on the usual chloroform exstraction 0,31 % (in relation to the dry plant mass) we formed a mixture of alkaloids and remerin (**51**), lyriadene (**52**) lyriadene (**55**), izolaurelin (**56**), new alkaloid isolaurelin N-oxide (**57**) and lignan seringarezinol (**58**) we separated [86].

Isolaurelin N-oxide *(57) Magnolia is a well-soluble optically active basis in water, separated from the leaves of kobus DC*. This is the water solubility of alkaloid (57), in its PMR-spectrum >N- CH_3 characteristic siljishi on the weak field of the group specific signal, in the mass-spectrum, the property of molecular ions to a weak intensity, as well as $(M - 1)^+$, $(M - 17)^+$ and $(M - 18)^+$ presence of ions peaks [42=43] and izolaurelin (**56**) from the molecular mass of

The difference in mass 16 units, which indicates that the alkaloid has an N-oxide character.

***3-picture. Magnolia kobus DC plant (flowering period*)**

Table 4.

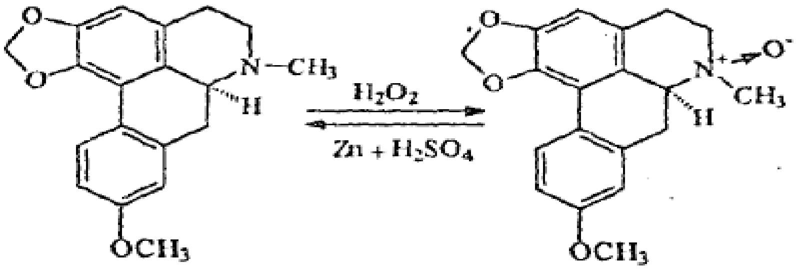
Izolaurelin N-oxide-spectral indicators

Alkaloid	UB – spektr: λ_{max}, nm, lgε	Mass-spektr: m/z	PMR-spektr, m.x., δ – shkala
Izolaurelin N – oksidi (31) $C_{19}H_{19}NO_4$	223, 283 (4,35; 4,18)	325 ($M^{\cdot +}$, 3,5%), 309$(M\text{-}16)^+$, 308$(M\text{-}17)^+$, 307$(M\ \text{-}18)^+$, 294, 292, 267, 266 (100%), 165, 151	2,90(>N-CH_3, s.,3H); 3,86(-OCH_3, s.,3H); 5,95 va 6,10 (CH_2O_2, d., J = 1,5 gts, 2H)

Note: PMR – spectrum: (18)—$CDCi_3$; (31) –CD_3OD obtained at. s - singlet; d – dublet; m – multiplet.

This is the water solubility of alkaloid (57), in its PMR-Spectra >N- CH_3 characteristic siljishi on the weak field of the group specific signal, in the mass-spectrum, the property of molecular ions to a weak intensity, as well as $(M – 1)^+$, ($M – 17)^+$ va $(M – 18)^+$ the presence of the peaks of ions [42=43] and the difference of izolaurelin (56) from the molecular mass to the unit of mass 16, which indicates that the alkaloid has an N-oxide character.

From the truth, (**57**) we recovered 10% of H_2SO_4 solution with Zn and formed izolaurelin (6). Liquefaction temperatures of N-oxides formed as a result of oxidation of alcohol solutions of isolaurelin with H_2O_2 solution, YuQX also R_f we found that the values and IQ-spectra are exactly the same as the (57) alkaloidlniki separated from the OSYM. Hence, (57) is the N – oxide of izolaurelin. we were the first to determine its presence in the plant world. The spectral properties of the separated N-oxide (57) are presented in Table 4.

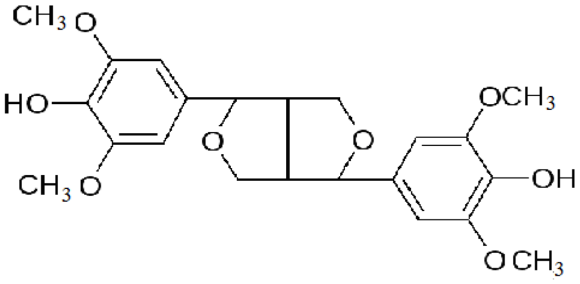


56 **57**

Ceringarezinol (58) - *Magnolia is a neutral, crystalline substance with a content of $C_{22}H_{26}O_8$, separated from the leaves of the Cobus DC, its liquid.* t. 168 – 170°C equal to. **70** of *UB – maximum of 2 absorption in the spectrum* λ_{max} 273, 280 (lg ε 3,20; 3,11) observed, *mass – while in the spectrum are the peaks of the following intensive ions*: m/z M^+ 418 (100%), 403 $(M – 15)^+$, 388 $(M – 30)^+$, 387 ($M – 31)^+$, 280, 251, 235, 226, 221, 210, 193, 182, 181, 168, 161.

4 methoxyl groups in the PMR – spectrum of the substance (3,82 m.x., singlet, 12H) and 4 pieces of aromatic protons (6,50 m.x., singlet, 4H) signals will show. The above spectrum information is described in the literature [76

compare with data, the neural substance we distinguish *L. tulipifera L* we found that lignan-seringarezinol (58), which is found in the plant [86].



58

Seringarezinol Magnolia is the lignan, which was first isolated from the category plant.

3.4. *Magnolia granridiflora L and M. abavata Thunb alkaloids*

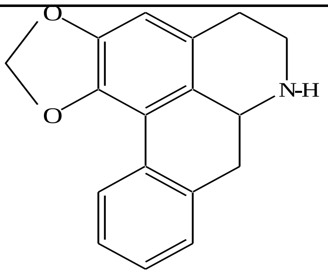
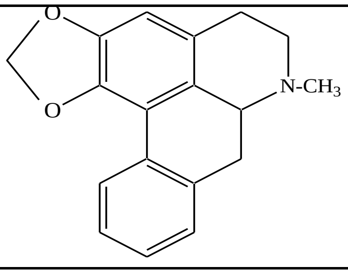
We studied the alkaloids of Magnolia grandiflora L and Magnolia obovata Thunb plants collected from the Botanical Garden of Botumi (Republic of Abkhazia) and received a mixture of 0.58% alkaloids from the leaves of Magnolia grandiflora L and 0.48% alkaloids from the leaves of Magnolia obovata Trunb according to the usual chloroform extraction method [97].

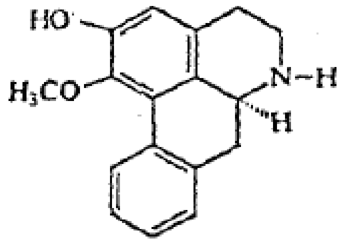
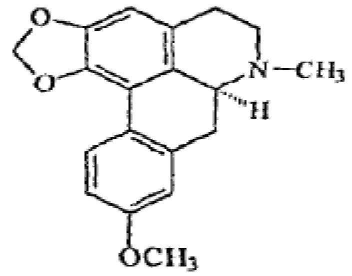
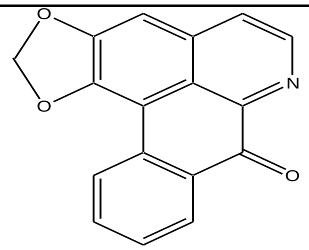
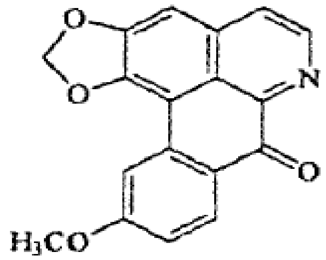
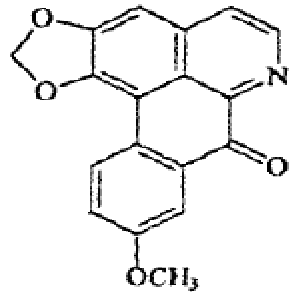
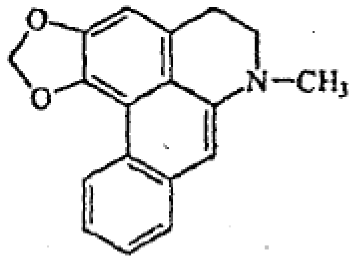
4-picture Magnolia obovata Thunb **5-picture Magnolia grandiflora L**

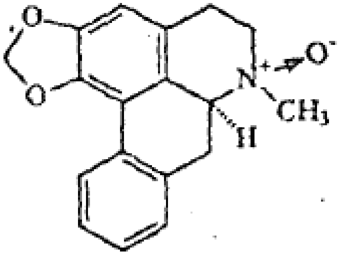
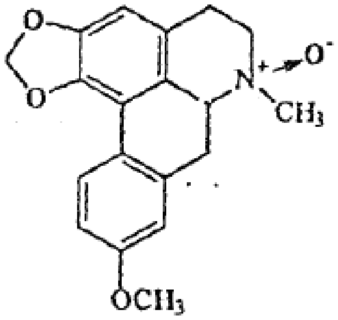
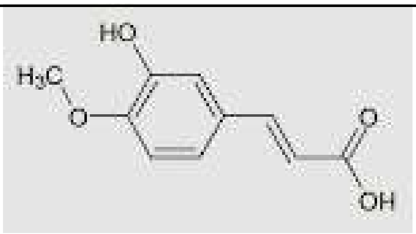
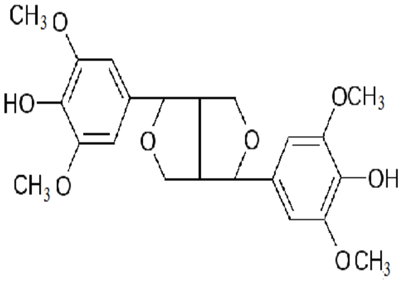
Magnolia grandiflora L and Magnolia obovata from the mixture formed from the Trunb plant, chromatography of alkaloids several times in the silicagelli colon, and as a result of re-crystallization in the corresponding solvents, 5 aporfinoid alkaloids from Magnolia grandiflora L plant: anonain, remerin, degidroremerin, liriodene and N-oxide remerin were isolated in pure induvidial state [97, 98]. *Magnolia obovata also 5 alkaloids from the Trunb leaf*: including two aporfin-anonain (50), remerin (51); two oksoaporphine-lirodenine (52), lanuginosine (54) and New alkaloid - N-oxide isolaurelin (57*)* [99]. (Table 5) It should be noted that the new alkaloid N-oxide isolaurelin was simultaneously isolated from the leaves of Magnolia kobus DC, which was introduced in the Botanical Garden of Tashkent [87].

Table 5

Checked plants belonging to the category Magnolia alkaloids

№	Name and composition of alkaloid	Structure Formula	Suyq. T.°C, $[\alpha]_D$	Natural source (plant)
1	$C_{17}H_{15}NO_1$ Anonain		120-122, -60°	Magnolia kobus DC M. grandifloria L M. obovata Thunb
2	$C_{18}H_{17}NO_2 \cdot HCl$ Remerin chlorine-hydrate		263-264, +68°	Magnolia nightmare DC M. grandifloria L M. abavata Thunb

3	$C_{17}H_{17}NO$ Asimilobin		175-176, -210	Magnolia kobus DC
4	$C_{19}H_{19}NO_3 \cdot HCl$ Isolaurelin chloride		244-245, $+35^{o}$	Magnolia obovata Thunb
5	$C_{17}H_9NO_3$ Lyriadene		273-275, $[\alpha]_D=0^{o}$	Magnolia nightmare DC M. grandifloria L M. obovata Thunb M. soulengeana Soul-Bod
6	$C_{18}H_{11}NO_4$ Axalaurelin		265-267, $[\alpha]_D=0^{o}$	M. soulengeana Soul-Bod
7	$C_{18}H_{11}NO_4$ Lanuginozin		319- 321, $[\alpha]_D=0^{o}$	Magnolia obovata Thunb
8	Degidroremerin $C_{18}H_{15}NO_2$		88-89 $[\alpha]_D=0^{o}$	M. grandifloria L

9	Remerin N – oksid $C_{18}H_{17}NO_3$		164-165, +55°	M. grandifloria L
10	$C_{19}H_{19}NO_4$ Izolaurelin N-oksid		138- 140 +46°	Magnolia kobus DC M. grandifloria L
	Fenol neytral moddalar			
11	$C_{10}H_{10}O_4$ Izoferul kislota		224-226° [α]=0°	Magnolia obovata Thunb
12	$C_{22}H_{26}O_8$ Seringarezinol		168-170° [α]=0°	Magnolia kobus DC

Roughly, From the Tashkent Botanical Garden and the Botanical Garden of Botumi (the Republic of Abkhazia, the Caucasus) we have separated 10 alkaloids and 2 known substances from Magnolia plants. Of the isolated alkaloids, oksolaurelin (53) and isolaurelin N-oxide (57) are the new alkaloids found first in the world of plants.

3.5. Plant alkaloids belonging to the Magnoia category mutual transfer to each other

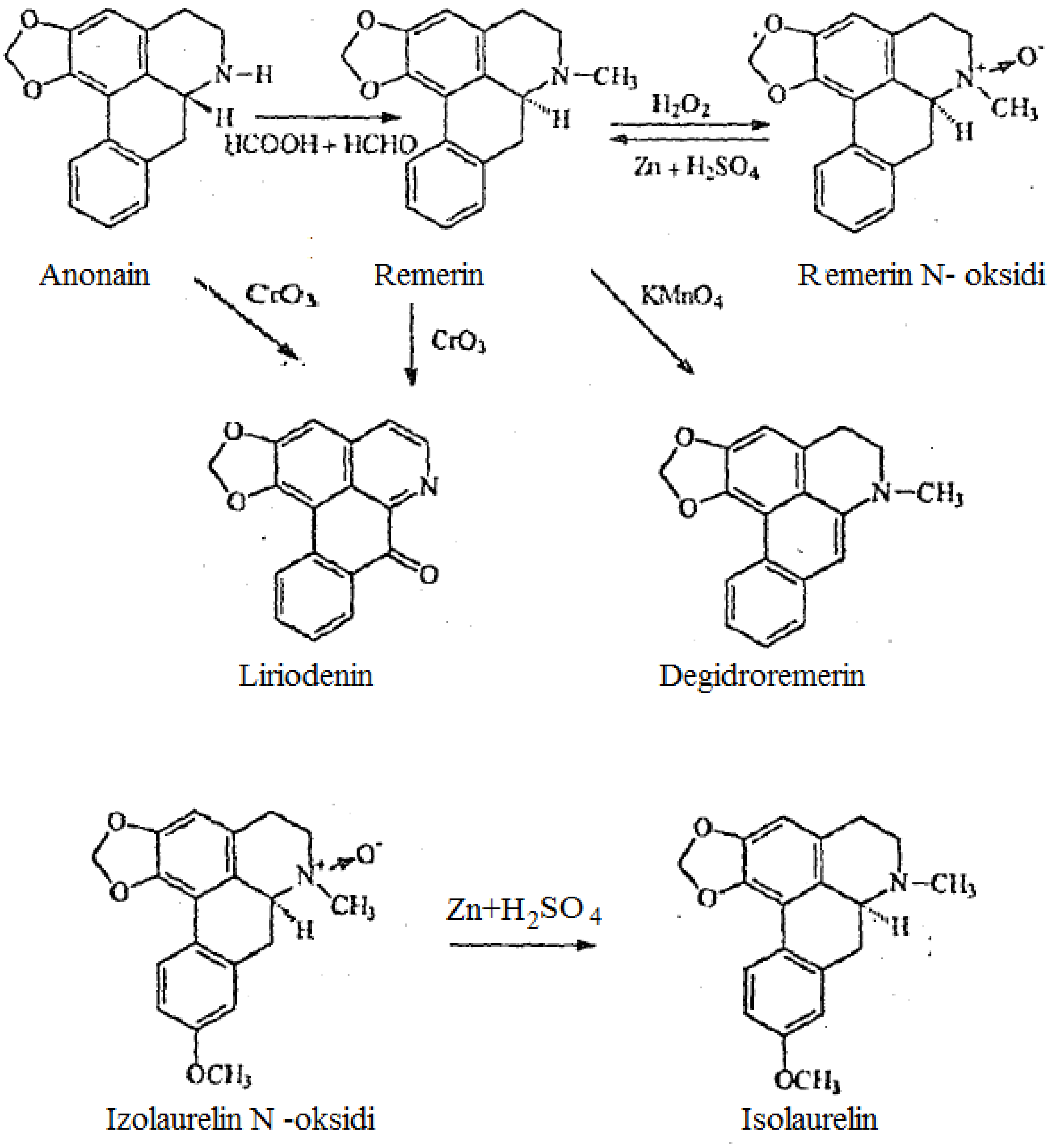
As a result of the study of the alkaloids of Magnolia category plants, 10 alkaloids are distinguished, which include in the sentence these alkaloids: aporfin and its 7-OXO, N-oxide and degidrohosilas.

Of the leaves of the investigated plants, the following aporfins: 7-oxoaporphins-liriodene (52) and lanuginosine(54) , corresponding to the same aporfins as anonain (7), remerin(54); 6A-7 - degiroaporphine –degidroremerin, aporfin N-oxides - N-oxide of remerin and isolaurelin n-oxides (57), corresponding to the following aporfins: anonain (51), isolaurelin (56); 6A-7-degiroaporphine-degidroremerin, aporfin n-oxides - [97] .

Aporfin alkaloids anonain and remerin oxoaporphine liriodenin; we carried out the synthesis of remerin N-oxide and degororemerin from remerin. Oksoaporphin-anonain from lirioden; we derived isolaurelin from N-oxide of isolauren (scheme-3)

Sxema - 3

Interaction of alkaloids with each other



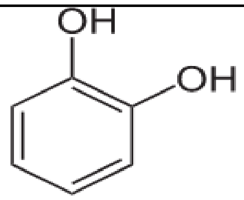
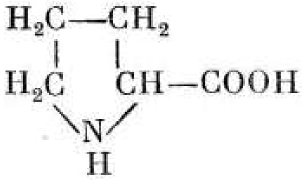
CHAPTER IV. Examination of alkaloids of some tree plants introduced in their R FA Botanical Garden

The Academy of Sciences of the Republic of Uzbekistan has analyzed 60 species of rare and medicinal plants introduced in the Tashkent botanical garden, belonging to more than 20 families of alkaloids of which 26 species are alkaloid-preserving plants [46-47].

Table 5

4.1. Some tree intruducents contain alkaloids and alkaloids the amount of mixture

№	Of a plant Type	Plant member	Alkaloids sum (% da)	Name and structure of Alkaloid
1	*2*	*3*	*4*	*5*
		1. Rutacaeae Juss		
1.	Zanthoxylum americanum Mill	petal young shocks	0,11 0,14	Skimmianin (62) Asimilobin (55)
2.	Zanthoxylum Simulans Hence	Petal	0,13	Skimmianin (62)
		2. Annonaceae Juss		
3.	Asimina trilofa L	Petal young fir-tree	0,086 0,105	Asimilobin (55), liriodenin (52), remerin (51), Remerin, liriodenin
		3. Euphorbiaceae Juss		
4.	Securinega suffruticosa (Pall) Rend	yer ustki qismi	0,35	Sekurinin (59)
		4. Menispermaceae DC		
5.	Menispermum canadense L	Petali	0,21	
6.	M. dahuricum DC	Petal	0,35	
7.	Cocculus Trilobus DC	Petal	0,48	Koklaurin(1), Izoboldin (10), Kokulin (27)
		5. Rhamnaceae Juss		

8.	Ziziphus jujuba Mill	Petal	0,048	Koklaurin(1), Izoboldin (10), Asimilobin (55)
9.	Ziziphus spinosus Hu	Petal	0,035	Koklaurin(1),
10.	Rhamnus frangula L - // -	Petal Coat	0,032 0,027	Armepavin (60)
11.	Rhamnus ussuriensis J. Vass	Petal	0,038	
12.	Rhamnus dahurica Pall	Petal	0,024	
13.	Rhamnus infectoria L	Petal	0,028	
6. Calycanthaceae Lindi				
14.	Calycanthus floridus L - // -	Petal young branches	0,18 0,12	Folikantin (61)
7. Alangiaceae Lindi				
15.	Alangium plalanifolum Harms	Petal	0,12	 Pirokatexin
16.	Alangium chinense Harms	Petal	0,14	CH_3- $CONH_2$ asetanid
8. Moraceae Juss				
17.	Moris nigra L	Po‘stlog‘i	0,024	 prolin

* Rhamnus francula, sold in the pharmacy as a weak laxative, is a decoction of dogrose.

5-in the table of particular interest is the examination of a number of alkaloid-preserving introducents listed, and their Alkaloids we planted for the first time in quantitative terms. The leaves collected mainly during the growth period (June-July) of the plants were examined, the alkaloids of the plants belonging to the 8 family were partially studied and the main alkaloids were distinguished. Below we will briefly dwell on the Asimina trilobaL, Zanthxylum americanum Mill and valuable medicinal plant Securinega suffruticosa Rend alkaloids, which are considered rare intruducent plants.

4.2 *Asimine trilabe L elgalaids*

Picture 4. **Asimina triloba L**

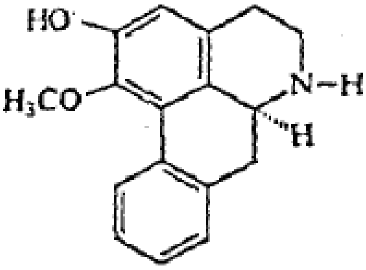
Asimina triloba L the plant belongs to the Annonaceae Juss family, it has 3 aporfin alkaloids from the plant leaf: we isolated remerin (51), anonain(50) and one oksoaporphine - liriodene (52), asymylobine (55), and remerin (51) and liriodene (52) from young branches.

4.3. *Zanthxylum americanum Mill alkaloids*

Zanthxylum americanum Mill *Rutaceae* it is a shrub tree belonging to its family, and its homeland is North America. *There are a number of data on the alkaloids of plants belonging to the category Zanthxylum* [48-51].

5-picture. Zantohxylum americanum Mill

From these plants, mainly Quinoline and quaternary aporfin alkaloids are distinguished. And we separated skimmianin (62) from the leaf of the plant Zanthoxylum americanum, and aporfin alkaloids-asymylobin (55) from the young shoots. *Z. the alkaloids of the simulans Hance plant have not been studied in US and abroad, and we found that its Leaf retains skimmianin (62.*



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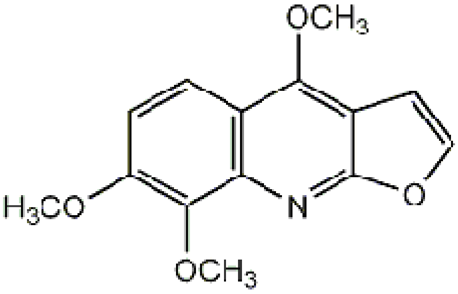

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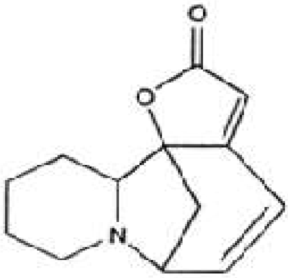
4.4. Securinega suffruticosa (Pall) Rend alkaloids

Securinega suffruticosa (Pall) Rend *Euphorbiaceae is a medicinal shrub plant belonging to the family of mammals and is widely grown in the country of eastern Siberia, the Far East, the Primorye. Its leaves and branches retain a large amount of healing alkaloid-securinin (59* [52-54].

In the Department of Medicinal Plants of the Tashkent Botanical Garden, we found out that the upper part of the Earth (along with leaves and branches) of the securinega suffruticosa plant, which has been growing for many years, contains a mixture of 0,35% alkaloids, which is about 37% of the mixture (that is, 0,13% compared to the dry plant mass)..

6- *rasm.* Calycanthus floridus L

7- *rasm.* Securinega suffruticosa(Pall) Rend



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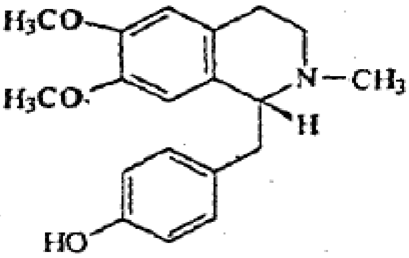
S.suffruticosa, which is grown in the conditions of Uzbekistan. the suffruticosa plant can be a natural source for obtaining the much-needed sekurinin nitrate biopreparate for practical tubing. To this end, it was recommended to establish the technology of growing this plant in many of our conditions.

From the leaves of Calantanthus floridus L (Calycanthaceae), harvested from the Botanical Garden of Tashkent, folicant (61), which is the main alkaloid of this plant, as well as from the bark of Rhamnaceae family Rhamnus francula L-itshumurt, which is sold as a weak laxative in pharmacies, we injected armepavin (60).



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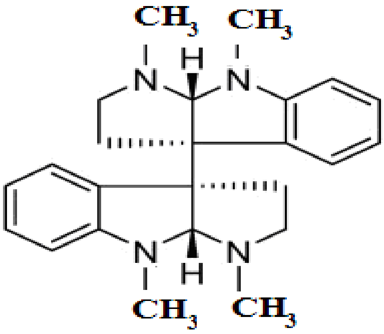


61

Summing up, it should be noted that the medicinal and rare plants belonging to the foreign flora listed in Table 3 are rich in quality and quantity of clotting alkaloids, which in the future will provide an opportunity for a more in-depth study of the alkaloids of these plants, finding from them new structure, as well as effective biologically active compounds.

4.5. *Verbascum songoricum Shrenk alkaloids check*

The alkaloids of plants belonging to the Verbascum category have not been studied in depth so far. In the scientific literature, only two endem species of plants of this category are Verbascum nobile Velen [90] and V. There is information about the alkaloids of phenicum [91]. And the alkaloids of the Verbascum songoricum Shrenk plant, which we studied first from Nomo.

Verbascum songoricum Shrenk – a two-year-old medicinal plant, whose leaves go up to 2 meters tall, belonging to the Scrophulariaceae family, is covered with a thick tuk. This plant is widely distributed in the foothills of the Republic of Uzbekistan and other Central Asian republics, in areas up to the middle of the mountain region [92].

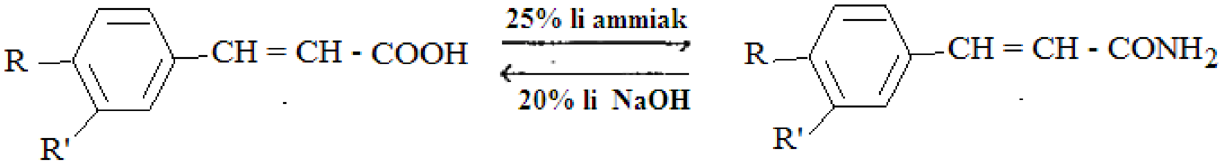
During flowering from the slopes of the Chimyon mountains of Tashkent region Verbascum songoricum Shrenk (Figure 8) leaf moistened with 10% ammonia solution and formed a mixture of 0.25% alkaloids by the usual method of chloroform extraction [93].

8-picture. Verbascum songoricum Shrenk plant in the flowering period

This is due to the solubility of the resulting mixture of alkaloids, according to the “strength of the basis”, as well as the presence in the silicagellic colony of three alkaloids: we separated the amides of plantagonin (63), indicaine (64), anabazine (65) and 4 amides: cinnamon (66), isoferol (67), coffee (68), benzoic (69), acetic acids [94]. The presence of anabazine alkaloid in plants belonging to the cow's family was first determined [95].

In a mixture of alkaloids, it is concluded that typical pyridine alkaloids-isoferol, cinnamon, benzoic acid amides, together with plantagonin, indicaine and anabasins, are more abundant in the plant in the amount of these released acids, and the isolated acidamides are reaction products formed as a result of processing the plant with ammonia. In truth, it was found that the amount of a mixture of alkaloids (0,095% compared to the dry mass of the plant) obtained by rubbing with a 10% solution of soda without the use of ammonia solution of this plant, and then by extraction with chloroform, significantly reduced. The presence of anabazine (65) and plantagonine (63) alkaloids in a mixture of alkaloids was easily proved, but did not manage to distinguish the amides of isoferol, cinnamon, benzoic and acetic acids.

We separated benzoic(10) , cinnamon (70), coffee (72) and isoferol (73) acids from the chloroform solution by a solution of H_2SO_4 with 73% H_2O. As a result of working with a solution of 25% ammonia of cinnamon (71), coffee(72) and isoferulic acid(73), we obtained the corresponding acid amides (66, 67, 68); instead of 66, 67, 68 in 20% NaOH solution, we formed cinnamon, isoferol and coffee acids.



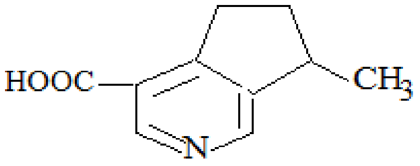
71. R = R^1 = H
72. R = R = OH
73. R = OCH_3; R^1= OH

66. R = R^1 = H
68. R = R^1 = OH
67. R = OCH_3; R^1= OH

Thus, we have proved that the above-mentioned acid amides (66, 67, 68, 69) are products of the reaction formed by the ammonia of the free carbonic acids contained in the plant without the presence of a free amide Halide, but as a result of working with the ammonia of the plant.

Alkaloids, Carbons and phenols, separated from the leaves of Verbascum songoricum.

1.Alkaloids



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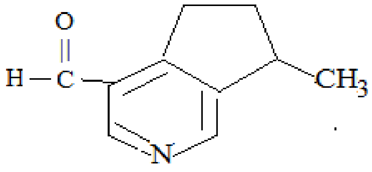

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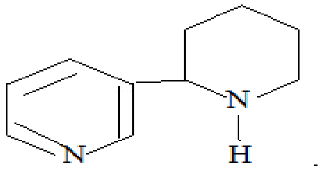

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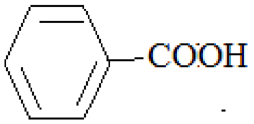
2. Carbonic acids



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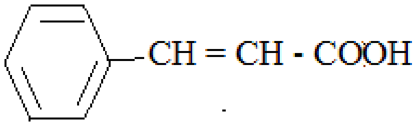

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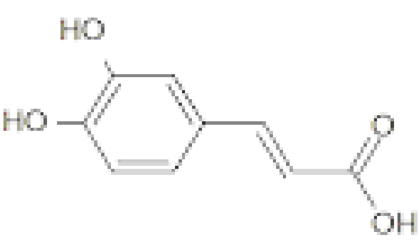
3. Phenol carbonic acids



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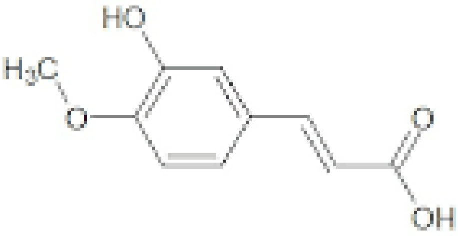

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In summary, it can be said that the Verbascum songoricum plant is anabazine, the main alkaloid of the upper part of the Earth, accounting for 60 – 65% of the resulting alkaloid mixture. We found out that the presence of anabazine in plants belonging to the family of cows is one of the first. Hence, a juniper cow with a large natural reserve can become a new natural source for obtaining insecticide alkaloid – anabazine sulfate [96].

V-PAB. ALKALOIDS OF SOME TREE PLANTS GROWING IN THE REPUBLIC OF GUINEA (AFRICA)

More than 60 tree and shrub plant samples belonging to 23 families common to flora of West-South Africa (Republic of Guinea) were collected from quality register to alkaloids. Of these, 12 belong to the family, 32 plants are alkaloid preservatives (Table 6), the following plants: *Annona muricata L, Annona, senegalensis Rers, Cananga odorata L, Xylopia aethopica A. Rich, Rauvolfia vomitoria Afz, Carica papaya L, Cocculus pendulus, Ziziphus mauritianus Lam, Fagara xanthoxyloides Lam, Solanum stramonium* L we found out that it is high in alkaloids [62].

Table 6

5.1. To alkaloids of some tree and shrub plants Quality analysis

№	Plant family and type	Plant member	The amount of alkaloids
1	*2*	*3*	*4*
	1. Annonaceae		
1	Annona muricata L	Petal coat	*0,125% 0,14%
2	Annona senegaleneis Pers	Petal coat	0,098% 0,105%
3	Xylopia aethiopica A. Rich	Petal coat	0,095% 0,115%
4	Cananga odorata L	Petal coat	**+++ +++
5	Uvaria chamae	Petal	+++
6	Cleistopholuis patens	Petal	+++
	2. Anacardiaceae		
7	Mangifera indica L	Petal	+
8.	Anacardium occidental L	Petal	+
9.	Spondias monbin L	Petal	+

3. Apocynaceae			
10.	Thevetia nerifolia Juss	Petal	++
11.	Tbnanthe iboga L.	Petal	++
12.	Landolphia ivorensis L	Petal	+++
13.	Landolphia dulcis Pichon Sabine	Petal	++
14.	Landolphia senegalensis Koschy	Petal	++
15.	Voacanga africana Stapf	Petal	+++
16.	Rauvolfia vomitoria Afz	Petal	+++
4. Bromeliaceae			
17.	Anonas comosus L	Petal	+
5. Euphorbiaceae			
18.	Hevea brasiliensis L	Petal	++
6. Caricaceae			
19.	Carica papaya L	Petal	0,105%
7. Lauraceae			
20.	Persea americana Mill	Petal coat	++ ++
21.	Cinnamonum zeylanicum Ness	Petal	++
8. Menispermaceae			
22.	Cocculus pendulus DC	Petal	+++
23.	Triclisia gilleti Stan	Petal	++
9. Mimosaceae			
24.	Acacia mangium L	Petal	++
10. Moraceae			
25.	Ficus integrifolia L	Petal	++
26.	Ficus capensis Thunb	Petal	++
11. Rhamnaceae			
27.	Ziziphus mauritianus Lam	Petal	+++
28.	Gouania longipotala L	Petal	++
12. Rutaceae			

29.	Zanthoxylum gvele L	Petal	+++
30.	Zanthoxylum virida	Petal	++
31.	Fagara xanthoxyloides Lam	Petal coat	+++ +++
13. Solanaceae			
32.	Solanum stramonium L	Petal	+++

** In percentage terms of dry plant mass;*
*** +++ in large quantities; ++ in small quantities; + very (incredibly} low alkaloid retention plant.*

9-picture. Republic of Guinea in the Indian university Professor Sory Fofana, prof. R. Ziyayev(A): gardener Mamadou Diallo and R. Ziyayev Carica in front of the papaya L Plant (B)

The tree and shrub plants listed in Table 4 are Konakri Botanical Bush of the Republic of Guinea, from the Garden of the University of India and the surrounding area of the University collected from the peasant millet, during the period of growth (in may-June), basically checked the leaves. They are a common fruit in the Guinea Republic belonging to the Annonaceae family, Annona murikata L, which is a dorivor, Annona selegalensis Pers and Xylopia aethiopica A. Fagara xanthoxyloides belonging to Rich and Rutaceae family were first studied in the alkaloids of Lam tree plants. Below we briefly dwell on the alkaloids of these plants.

5.2. The elkaloids of your mother muriceta L

Annona murikata L (in English "*sour-sop", local language "sop-sop",in* Russian "*сметанное яблоко") Annonaceae* belongs to the family, is a medicinal fruit plant widely distributed in the Republic of Guinea, its height is 7-9 meters, *Annonaceae* fruit in fruit trees belonging to the family (4,5-7 kg) is an alkaloid-preserving plant [64, 65].

Picture 10. **Annona muricata L (sour – sop)**

From the scientific literature it is known that the alkaloids of the Annona category plants have been studied well enough in the world and are separated from the alkaloids mainly belonging to the aporfinoid group [66 – 69].

Konakri Botanical collected from the garden Annona muricata L as a result of the usual chloroform extraction from the plant leaf 0,125 % (to the dry plant mass relatively) We separated the sum of alkalodes, and then divided this mixture of alkaloids into phenols and non-phenols. Silica thin layer chromatography (YuQX) by the method, we found that the system of solvents consists of 4 pieces of phenol-ethanol (4 : 1) and a mixture of 4 pieces of non-phenol bases with phenol nature and 5 pieces of alkaloids. In a colonic with silica, phenol contains a mixture of natural alkaloids (the eluents are pure benzene, benzene-ethanol 99:1; 98:2; 95:5; and as a result of being 90:10), we isolated 4 individual alkaloids from a mixture of phenolic-free bases in a clean state. As a result of the comparison of the individual alkaloids separated by their physico – chemical properties, Cuqh, as well as their actual samples, we found that the following are certain grounds.

Basis 1. $C_{17}H_{19}NO_3$ phenolic natures crystal base, liquid. T. 218 – 220^{o}C (aseton) *koklaurin* **(1)we have identified that** [13, 44].

Basis 2. $C_{18}H_{21}NO_3$ colorless crystal base, liquid. t. 177 – 178^{o}C (aseton), $[\alpha]_D$ +25^o (EtOH). Basis 2 ni Ziziphus compare directly with N-methyl-koklaurin (2), which is separated from jojuba Mill plant (unrestrained. t., R_f va IQ – spectrum) we found out that they are exactly the same substance [56, 58].

Basis 3. $C_{17}H_{17}NO_2$ unrestrained. t. 175-176^o (aseton), $[\alpha]_D$ - 210^{o}C ($CHCl_3$). We compared this al-kaloid with its actual sample and found that assimilobin (55 [58].

Basis 4. $C_{18}H_{17}NO_2$ unrestrained. t. 102 – 103^{o}C , $[\alpha]_D$ – 77^o (spirt). We identified that this alkaloid is the same as remerin (51)[56].

Basis 5. $C_{17}H_{15}NO_2$ unrestrained. t. 120 – 122^{o}C. Mass-spectrum, m/z: 265 (M^+), 264 $(M – 1)^+$ (100%), 250, 236, 235, m^{++}132,5. *Anonain* **(50)** we have determined that [44].

Basis 6. $C_{18}H_{17}NO_3$ unrestrained. t. 124 – 126^{o}C (aseton). *UB- spektr* (λ_{max}, spirt): 219,282 nm (lgε 4,49; 4,25) similar to the izolaurelin spectrum. Mass-spectrum of this basis m/z: 295 (M^+), 294 $(M - 1)^+$, 280 $(M – 15)^+$, 266 $(M – 29)^+$, mm^{++} 147,5 noraporphine

characteristic for alkaloids, it differs from the isolaureline spectrum by 14 units of mass. From this it can be assumed that the basis 6 is norizolaurelin. Indeed, we made 6 according to the method of Gess, methyl, izolaurelin. So we determined that the basis 6 is xylopine (74)[44, 61].

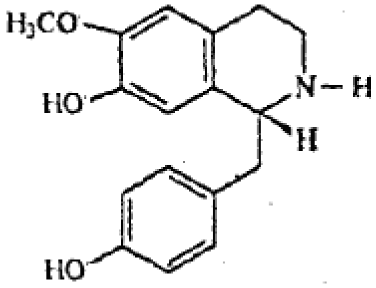
Basis 7. $C_{19}H_{19}NO_3 \cdot HCl$ chlorhydrate isolated in the case, liquid. t. 244-246^{o}C and we identified it with izolaurelin (56)[44,70].

Basis 8. $C_{19}H_{21}NO_4$ unrestrained. t. 125 – 126^{o}C (benzol), $[\alpha]_D$ + 42^o (spirt). *UB- spektr* (λ_{max}, spirt): 220,280, 313 nm (lgε 4,50; 4,20; 4,18). Mass – spektr, m/z: 327 (M^+), 326 $(M – 1)^+$ (100%), 312 $(M – 15)^+$, 310 $(M - 17)^+$, 296 $(M – 31)^+$, 284 $(M -43)^+$, 269, 253, m^{++} 163,5. On the basis of the quotes, we found out that this basis is isoboldin (10)[13, 58].

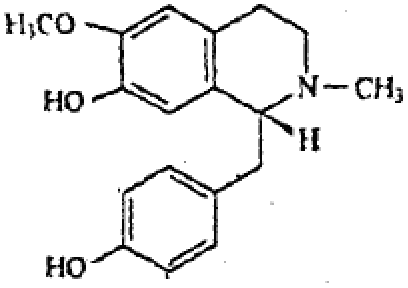
Basis 9. $C_{17}H_9NO_3$ unrestrained. t. 273 – 275°C (xloroform), not optically active, a crystalline substance of yellow color. We directly compared this alkaloid with liriodendron tulipifera L plant airatib liriodenin (52) and found that they are exactly the same alkaloid [71].

Alkaloids isolated from Annona muricata L plant

1.Benzyltetragidroizoquinolines

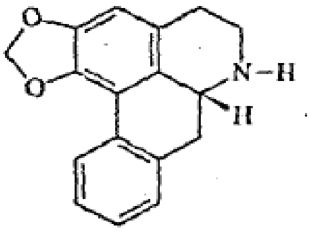


1. Koklaurin

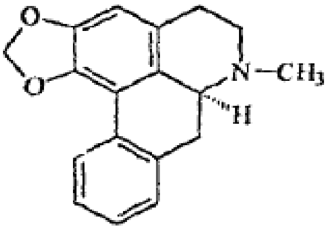


2. N-metilkoklaurin

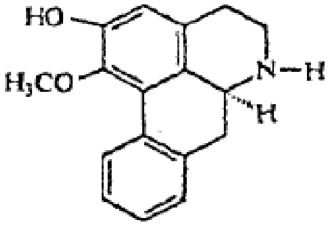
1. Noraporfin va aporfinlar



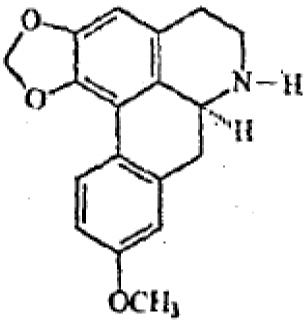
50.Anonain



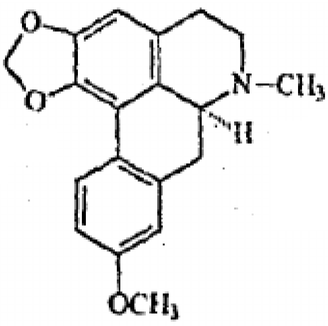
51. Remerin



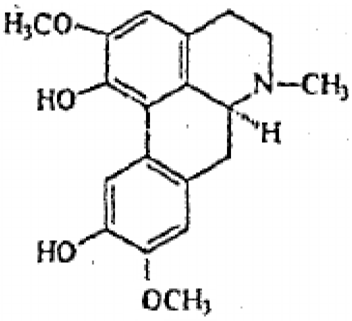
55. Asimilobin



74. Ksilopin

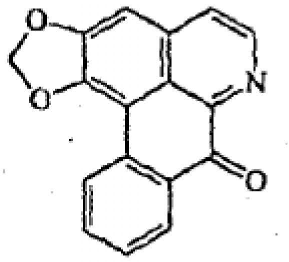


56. Izolaurelin



10. Isoboldin

2. Oksoaporfin



52. Liriodenin

Summarizing, we isolated and identified 9 alkaloids from the leaves of the Annona muricata L plant. The isolated bases are alkaloids belonging to the benzyl tetragidroisoxinoline, aporfin and oksoaporphin groups, among which isoboldin (10), asymylobin (55), remerin (51), liriodene (52) were first found from this plant.

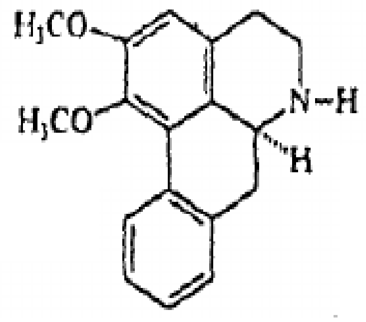
5.3. *Annona senegalensis Pers alkaloids*

Annona senegalensis Pers (Senegal Apple) *Widely distributed in the Republic of Guinea belonging to the Annonaceae family, it is a healing fruit tree about 4-7 meters in height mold (in folk medicine it is used in the treatment of various diseases, including colds, coughs, dysentery and skin diseases* [64, 65].

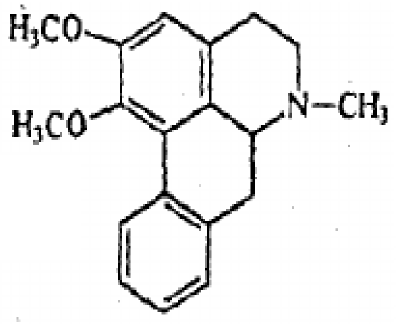
Continue the texturing of the alkaloids of the Annona category plantstirib, the alkaloids of the Annona senegalensis Pers plant collected from the periphery of the Indian province of Guinea Republic were first studied [57]. From this plant leaf we get the sum of alkaloids 0,095 % (compared to the dry plant mass) in the usual chloroform extract Naija.

Picture 11. **Annona senegalensis Pers**

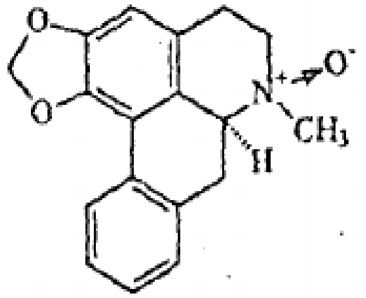
This is due to the division of the alkaloid mixture into phenol and non-phenol components, chromatography of the silicagelli colon several times, as well as re-crystallization in the corresponding solvents, a total of 9 alkaloids, of which 5 were previously isolated from the Annona muricata L plant alkaloids: we have isolated cochlaurin (1), asymylobin (55), remerin (51), liriodene (52), anonain(50), as well as four additional alkaloids: nornutsiferin (75), nutsiferin (76), N-oxide remerin (77) and lysikamin (78 [59, 60].



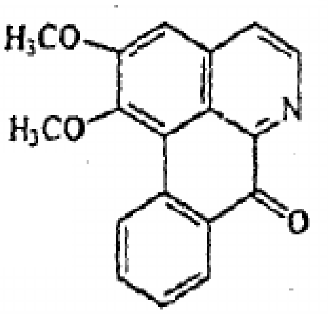
75. Nornutsiferin



76. Nutsiferin



77. N-oksid remerin



78. Lizikamin

It should be noted that the alkaloids: 75, 76, 77 and 78 were previously taken airatib from Liriodendron tulipifera L-Tulip dararahti [72, 73].

5.4. Xylopia aethiopica A. Rich alkaloids

The Xylopia category plant, belonging to the Annonaceae family, is widely distributed in the tropic zones of Africa, with about 160 species known [65]. The alkaloids of this category plant have been poorly studied and some of their species tetragidroizoxinoline alkaloids have been found [74, 75].

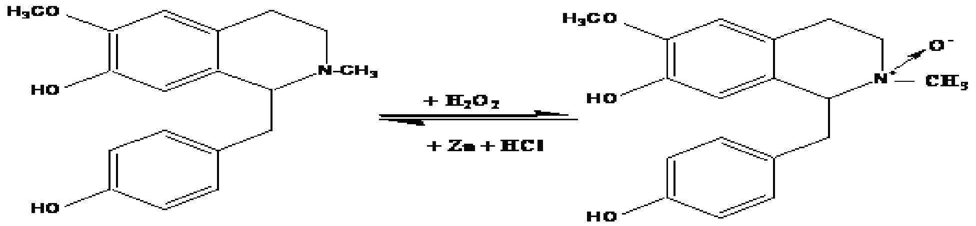
Common in Central Africa, including Guinea, is Xylopia aethiopica A. Rich (local name: Poivre de Guinée, Guinea pepper), a tree whose height reaches 12-16 meters, the alkaloids of this plant have not been studied so far. *We first heard from the forests of the Kundia region (the Republic of Guinea) in may, crying Xylopia* *aethiopica A. From Rich leaves we received a mixture of 0,095% alkaloids by the method of extraction of classical chloroform.*

12-picture. Xylopia aethiopica A. Rich and its fruits

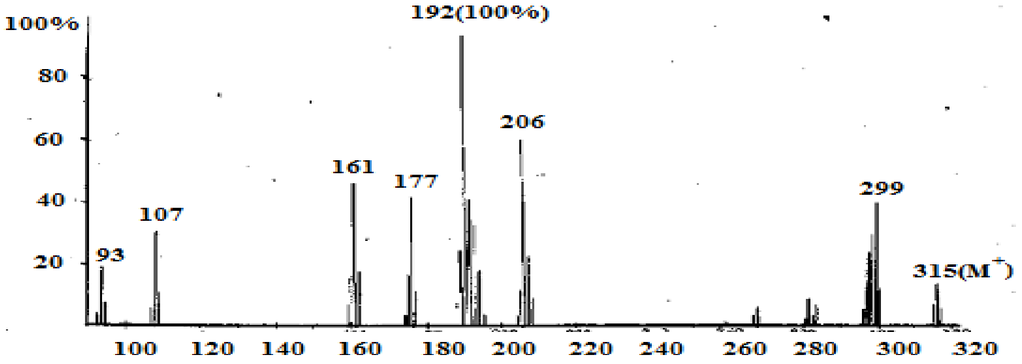
4 alkaloids for Chromatography of chloroform mixture in silica colonic separated. 3 of the bases on which it is distinguished are known alkaloids: koklaurin (1), N-methylcoclaurin (2) and armepavin (60), and 4-th xyloethiopin (79) - a new alkaloid, we determined its chemical structure.

Ksiloetiopin (79). $C_{18}H_{21}NO_4$ contains, phenolic nature, well soluble in water, optically active $[\alpha]_D$ -86^o (spirt) basis. 64 of *UB – spektri*: α_{max} 224, 286 nm (lgε 4,22; 3,70) benzyl tetragidroisoxinoline is characteristic for alkaloids, while in the IR – spectrum there is a specific absorption maximum for the group of hydroxyl (3200-3400 cm $^{-1}$. Ksiloetiopinning mass – spektridaesa following m/z intensive ion peaks: 315 (M^+, 1,5 %), 299 $(M - 16)^+$, 206, 192 (100 %), 177, 161, 107 va 93 observed. Water solubility of Alkaloid 64, the property of the molecular ion in the mass-spectrum to a weak intensity, as well as $(M - 16)^+$ the presence of an ion shell [72,76] and the mass unit greater than the molecular mass of N-methylcoclaurine (2)16 indicates that the base can be N-oxide N – methyl coclaurine.

From the truth, **79** 10 % H_2SO_4 + Zn retract with, We formed N-methylcoclaurine (2). On the contrary, we found that the reaction formed as a result of oxidation of the alcohol solution of N-methylcoclaurine with H_2O_2 ethyl is the same basis as the product xyloethiopine. So, xyloethiopin **(79)** N-metilkoklaurin N – carbon monoxide mold was the first to determine its presence in the plant world.

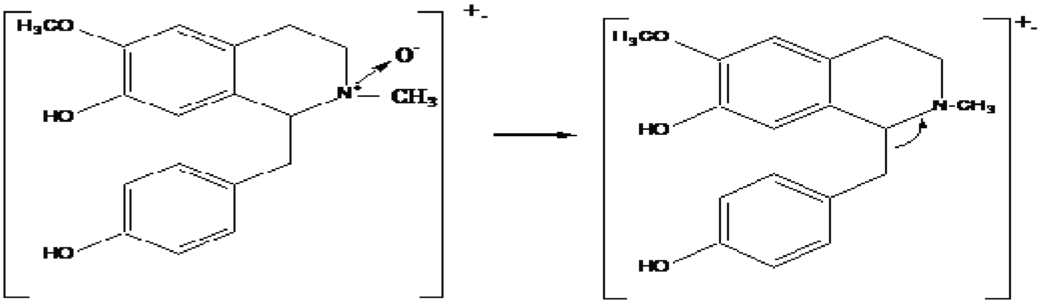


2. N-metilkoklaurin **79. Ksiloetiopin**

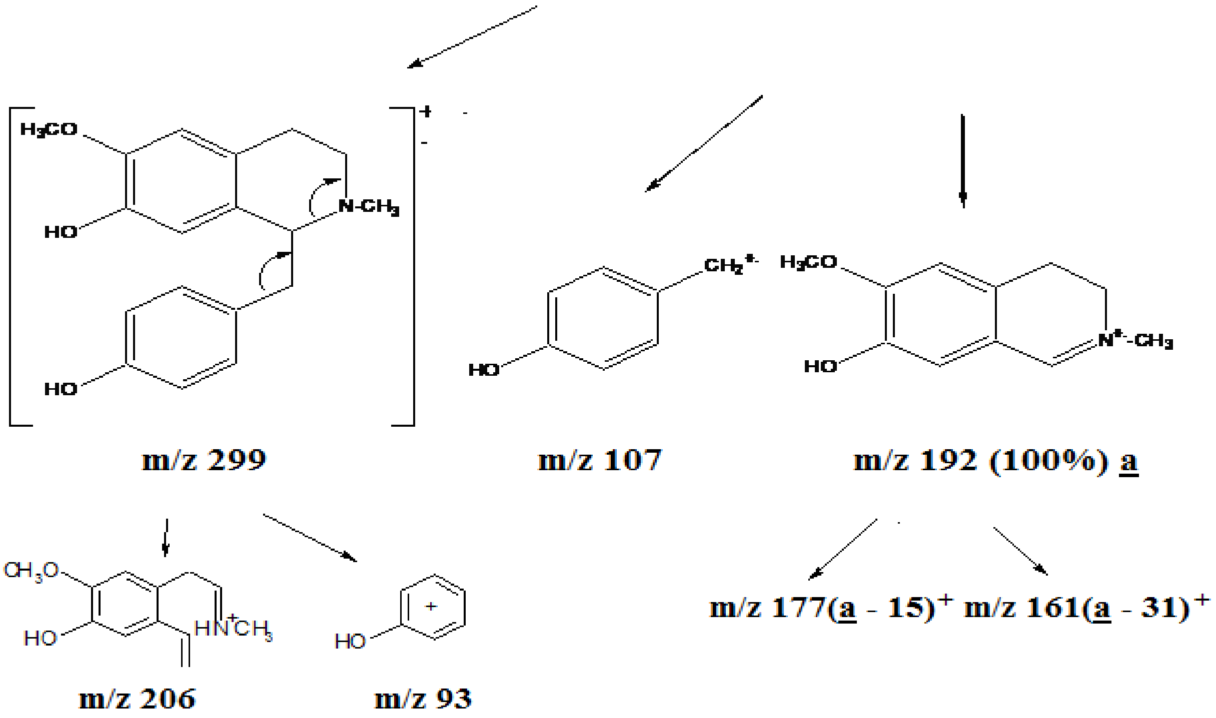


13-picture. Mass-spectrum of xyloetiopin

Xyloetiopin to mass-spectroscopic fragments decay



m/z M^{+} 315(1,5 %) m/z 299 $(M - 16)^{+}$

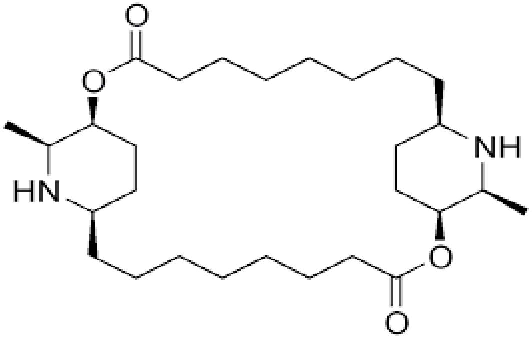


5.5. *Carica papaya L alkaloids*

Carica papaya L (papaya, "melon seeds") A tree belonging to the Caricaceae family is a plant, its homeland is Mexico. This curative fruit pendant is currently grown in many in all tropical countries including the Republic of Guinea. In addition, on the Black Sea coast of the Caucasus and the southern part of Uzbekistan began to grow as an experiment in the Surkhandarya region.

13-picture. Carica papaya L plant and fruit.

Carica papaya L papaya fruit is rich in many enzymes and proteins. The fact that its fruit juice has the property of breaking down the hard fibers of meat has been used in South America for thousands of years. From the raw fruit and leaves of this plant, an alkaloid called carbain (80)[77,78].



80. Karpain

We determined that the Carica papaya L leaf in the garden of the University of India of the Republic of Guinea was kept alkaloid when qualitative analysis was performed on the alkaloids and separated from the leaf of the plant a mixture of alkaloids by 0,105 % (compared to the dry plant MSSA) by the usual classical chloroform extraction method.

VI-PAB. EXPERIMENTAL PART

6.1. General notes

The IQ – spectra of the isolated substances are obtained by pressing with potassium chloride on the UR – 10 (Carl – Seys) spectrophotometer, while the UB –spectra are obtained by EPS-3T “Hitachi” spectrometer of alcohol solutions of substances.

PMR – spectra of substances obtained from Halide solutions in their deyteroxloroform, triforsirka acid and deyterananol in “Tesla” instruments JNM – 100/100 Mts and BS 567 A/100 MHz. As an internal ethalon, geksametelenseloksin was used, and its signal was received as δ – 0 on the scale. Mass spectra are obtained in the MX – 1306 and mass – spectrometer of the brand 1310.

The temperature of the liquid substances was determined in thin glass capillary tubes using special instruments from the concentrate H2SO4, as well as from the latun.

Identification of the isolated substances, the thin layer used chromatography (YuQX) in determining the density. For YuQX, the LS 13 mkm branded silicagels (layer thickness 10 nm), which store 40% KSK and 10% gypsum, and the following melting systems were used:

1. Benzol – etanil (9 : 1) ; (4 : 1);
2. Butanol – 1 – sirka kislota – suv (9 : 1 : 5);
3. Etilasetat – etanol (9 : 1);
4. xloroform – etanol (9 : 1) va (4 : 1).

As a sorbent for colonic chromatography, silicagels of KSK and aluminum oxide with a size of 125 – 160 microns, as well as LS40/ 100mkm, LS – 100/250 microns were used. As a color-forming substance, iod vapors and Dragedorf reagent were used.

6.2. Amount of a mixture of alkaloids in plants definition of aspect

Thoroughly dried and crushed plant around 50-100 g is moistened with 10% solution of ammonia (1 : 1), placed in a socket apparatus (or 1 - 2 liters of smoked sausage) of constant circulatory action. Then start Sokslet Apparat .

If the extraction is carried out in a tube, one day after the expiration of the time, the solvent in the plant is taken to another container through the brine, and the plant is poured fresh pure chloroform. In this way, the alkaloids in the plant are extracted until they are completely dissolved, that is, give the alkaloids a negative reaction with Silicon-wolfram acid (usually 5-6 times). From this extract, it is said that the chloroform extracts obtained by this or that method are concentrated around 9,5 liters quyul separation of alkaloids into 10% li H2SO4 solution (until the acidic solution reacts to Alkaloids) is obtained with the help of a funnel. Acid solutions are filtered and rinsed with an effir. Then this solution is treated with a 25% solution of ammonia until the environment in the presence of ether is alkaline (pH ≈ 9. From the formed alkaline solution, alkaloids are first efir, then extracted with chloroform. Efir and chloroform solutions are dried in anhydrous K_2CO_3 and the solvents are plowed. Then the amount of the remaining residual-alkaloid mixture is determined in percentages in relation to the dry plant mass. Similarly, in the above method, a quantitative analysis of the sum of about 100 alkaloids in different members of more than 50 plant species was carried out.

6.3. Cocculus laurifolius DC plant checking for alkaloids

Cocculus laurifolius DC, collected from the city of Kobuletti, dried the plant and extracted the crushed (5,5 kg) leaves with chloroform according to the usual method. As a result of the extraction, we isolated a mixture of 28,8 g of ether and 11,2 g of chloroform alkaloids. The total sum is 40 g or 0,72% compared to the dry plant mass. We divided 28,8 g of ether alkaloids mixture into phenolic-nature (8,3 g) and non-phenolic (11,2 g) components.

We isolated 8,3 g of coconut, made with acetone, a mixture of 3,5 g of phenol-nature alkaloids. We chromatographically separated the coculin in a silica colonic solution and injected the colonic with benzene-ethanol (99 : 1), (98 : 2) va (95 : 5) we washed with a solvent system. Benzol – etanol (98 : 2) from elyuat 0,15 g from elyuat, 0,075 g norizoboldin, 0,05 g koklafin; benzol-etanol (95 : 5) and from elyuat we separated 0,12 g of koklaurin. We used real samples of these alkaloids in the identification of isoboldin, norizoboldin, koklaurin and kokulins.

Kokulin (27). Liquid of re-crystallized alkaloid in acetone. t. 215 -217° C, $[\alpha]_D^{23}$ + 270° (c 0,25; etanol); R_f 0,60 system 1.

Koklafin (29). Liquid of crystallized alkaloid in acetone.t. 264-266°C, $[\alpha]_D^{23}$ + 255° (c 0,50; etanol); R_f 0,33 system 1.

UB – spektr, λ_{max}, nm: 208, 230, 285 (lgε 4,30; 3,71; 3,41)

IQ – spektr, ν_{max}, sm^{-1} : 1300, 1510, 1585, 3455;

Mass – spektr, m/z: 257 (M^+), 240 $(M – 17)^+$, 213 $(M – 44)^+$, 212 $(M – 45)^+$, 196, 150.

Methylation. In a double-mouthed cone tube with a capacity of 25 ml, mixed with a reverse refrigerator and a dropper funnel, dissolve 0,026 g of coclafin in 5 ml of dried dioxane, add a little 45 g of sodium light and mix using a 60o 1 hour magnetic mixer. Then we drip into the reaction mixture through a drip funnel, add 1 ml of methyl iodide and Heat 3 hours in the still stirring. After the reaction is complete, we filter the excess NaH and wipe the filter under the vacuum. The liquid produced by the residue acetone. t. 237-238 ga equal to and kokulidine iodmetilate (liquid. t., YuQX and IQ-Spectra) and formed a reaction product that is exactly homogeneous.

Kokulidin (28). 11,2 g we treated a mixture of non-phenolic alkaloids with a boiling petroleum ether. Driving the solvent we formed 2,1 g oil residue, which consists mainly of cocolidine. This residue is cleaned in a silica colonic liquid, t. We separated the crystals equal to 84-86o C. R_f 0,65 system 1.

We chromatographed the insoluble residue in the Petroley broadcast in a column with silica and colonized it benzol – etanol (99:1), (99:2) and (95:5) we washed with. As a result, we separated 1,5 g of cocolidine, 9,28 g of coclafine, 0,085 g of coclaurifine, 0,12 g of N-methyl-coclaurifine and 0,22 g of cocolidine N-oxide.

Koklafinin (30) chloride. Benzene-ethanol (98:2) we dissolved 0,28 g of coclafinine formed from elium in acetone and added a drop of HCL's alcohol solution until a weak acidic environment was formed. We recrystallized the fine crystals of the formed coclafine chloride in acetone. Unrestrained. t. 236 – 238° C, $[\alpha]_D^{23}$ + 240° (c 0,2; spirt), R_f 0,45 system 1.‘‘‘

UB – spektr, λ_{max}, nm: 204, 228, 285 (lgε 4,30; 3,88; 3,30)

IQ – spektr, ν_{max}, sm^{-1} : 880, 1106, 1245, 1470, 1610, 2835, 3400 -3435.

Mass – spektr, m/z: 271 (M^+), 270, 256, 227 (100 %), 226, 212, 196.

Transition from coclafine to coclafine. We added 0,045 g of coclafine on top of 5 ml of freshly prepared diazometan from an ether solution. We poured the reaction mixed sausage into the mouth with a puncture stopper and left it under a 3-day gauze swab. Then we flew the ether and formed a residue consisting of a mixture of Rf 0,45 and 0,33 (koklafin) alkaloids. We chromatographed this residue in a small silica colon and separated the basis of the R_f value koklafin equal to R_f 0,45.

No liquefaction temperature depression was observed in the mixture of coklafine chloride with chloride formed from peaked products.

Koklaurifin (22). Liquid of crystallized base in acetone. t.119 -121°C, R_f 0,30 sistena 1.

UB – spektr, λ_{max}, nm: 222, 284 (lgε 4,30; 3,91)

IQ – spektr, ν_{max}, sm^{-1} : 930, 1135, 1245, 1450, 1510, 1595, 2855, 3350.

Mass – spektr, m/z: 283 (M^+,100%), 268, 240, 226, 211, 195, 181. $m^{==}$141,5.

N- methylkaglaurifine (23). Amorphous Halda separated. R_f 0,52 system 1.

UB – spektr, λ_{max}, nm: 221, 286 (lgε 4,34; 3,90)

IQ – spektr, ν_{max}, sm $^{-1}$: 845, 915, 1240, 1500, 1600, 2850

Mass – spektr, m/z: 297 (M^+,100 %), 282, 254, 240, 239, 225, 195, m^{++}148,5.

Methylation of koklaurifin by the method of Gess. We put 25 ml of capacitive Teg in a round shlifted tube 0,035 g koklaurifin, 2ml 85% li HCOOH and 2 ml of formalin solution, we put the tube in the reverse refrigerator and boil the mixture for 4 hours in a sand bath. Then we cool the reaction mixture and dilute it with the addition of 2 - 3 ml of water. We extracted the solution with an alkaline efir with 25% ammonia solution. Drive the dried ether at NA_2SO_4 without water, R_f 0,52 and IQ- spectrum We formed a homogeneous basis with N-methylkoclaurifiniki.

Kokulidin N – Oxide (31). The liquid of the base crystallized in acetone. t.152 -154° C, $[\alpha]_D^{22}$ + 245° (c 0,20; metanol), R_f 0, system 2.

UB – spektr, λ_{max}, nm: 205, 225, 287 (lgε 4,37; 3,95; 3,40)

IQ – spektr, ν_{max}, sm $^{-1}$: 885, 1100, 1240, 1340, 1465, 1505, 1610.

Mass – spektr, m/z: 301 (M^+, 3,4 %), 285$(M – 16)^+$, 284$(M – 17)^+$, 283$(M – 18)^+$, 270, 254, 227 (100 %), 226, 196.

6.3. Testing of alkaloids of some plants introduced in the Botanical Garden of the Russian Academy of Sciences

6.4.1. Magnolia soulangeana Extraction of a mixture of alkaloids from young branches of the Soul-bod plant.

We extracted 1.5 kg of Magnolia soulangeana Soul-Bod young shoots from the Botanical Garden of the Academy of Sciences of the Republic of Uzbekistan in the usual way by soaking them in 10% ammonia solution and chloroform.. As a result of extraction, we obtained a mixture of 1.25 g of ether and 0.85 g of chloroform bases. Total 2.10 g (0.14% of dry plant mass).

We chromatographed a mixture of 1.25 g of ether alkaloids in a silica gel column and washed the column with a mixture of benzene-ethanol (98: 2) and (95: 5) solvents.. Benzol – etanol (98: 2) We extracted 0.10 g of remerin and 0.35 g of lyriodene from the eluate..

Oxolaurelin (53). Benzol – etanol (95: 5) separated the yellow crystals from the initial fractions of the eluate. Liquid of an alkaloid recrystallized in methanol. t. 265 – 267°C, $[\alpha]_D^{22}$ $\pm 0^o$ (c 0,15; metanol), R_f 0,33, system 1.

UB – spektr , λ_{max} , nm: 249, 270, 309, 349 (lgε 4,21; 4,03; 3,72; 3,84); λ_{max}^{HCl} 259, 280, 379 (lgε 4,07; 3,99; 3,73).

IQ – spektr, ν_{max} , sm $^{-1}$: 755, 970, 1060, 1250, 1265, 1605, 1650.

Mass – spektr, m/z : 305 (M^+, 100%), 290, 275, 262, 234, 206, 204, 176, 175, 149, m^{++} 152,5.

Fixed (on account of %): C 71,11; 70,98; H 3,86; 3,65; N 4,21; 4,35.

M^+ 305 (mass – on spectroscopy)

$C_{18}H_{11}NO_4$ *Calculated %* : C 70,82; H 3,60; N 4,59.

6.4.2. Magnolia from the leaves of the nightmare DC plant separation of a mixture of alkaloids

We extracted 2,5 kg of crushed dry Magnolia Cobus DC (collected in the beginning phase of leaf shedding from the Botanical Garden of Tashkent) leaves with chloroform according to the usual method. As a result of the extraction, we isolated a mixture of 2,95 g of ether and 1,05 g of chloroform, total 4,0 g of alkaloids (relative to the dry plant mass)..

We divided the mixture of 2,95 g of ether alkaloids into phenol (1,05 g) and non-phenol (1,8 g) components.

We separated the crystals of 1,8 g of liriodene, producing 0,25 g of a mixture of non-phenolic alkaloids with chloroform. We chromatographed the solution in a silica colonic, separated 0,095 g of Anona, 0,15 g of remerin, 0,12 g of liriodene, 0,1 g of lanuginosine, 0,55 g of isolaurelin N-oxide, 0,12 g of asymylobine and

0,09 g of sirengarezinol from a mixture of phenol-nature alkaloids.. We identified all known alkaloids by comparing them directly with actual samples extracted from the liriodendron tulipifera L plant.

Isolaurelin N-oxide (57). Liquid crystallized base in acetone. t. 138 – 140°C, $[\alpha]_D^{23}$ + 46° (0,20; metanol), R_f 0,18 sistema 1. ‘‘‘‘‘

UB – spektr , λ_{max} , nm: 249, 270, 309, 349 (lgε 4,21; 4,03; 3,72; 3,84); λ_{max}^{HCl} 223, 283 (lgε 4,35; 4,08).

IQ – spektr, ν_{max} , sm $^{-1}$: 850, 945, 1060, 1250, 1340, 1515, 1595, 2845.

Mass – spektr, m/z : 325 (M^+, 3,5 %), 309, 308, 307, 294, 292, 267, 266(100%), 265, 251, 235.

Return of Izolaurelin N-oxide. We dissolve 0,035 g of alkaloid in 5 ml of 10% sulfuric acid solution, add about 1,5 g of Zn powder and leave the reaction mixture for 24 hours. Then we filter the mixture, rub it with 25% ammonia solution and extract it with efir. Driving the broadcast, we formed a homogeneous reaction product with izolaurelin (56). Rf 0,64 Systema 1.

Sirengarezinol (58). Benzol – etanol (98 : 2)we recrystallized the Christals formed from elyuat in acetone. Unrestrained. t. 168 – 170°C, R_f 0,34 system 1.

UB – spektr , λ_{max} , nm: 273, 280 (lgε 3,21; 3,10).

IQ – spektr, ν_{max} , sm $^{-1}$: 715, 845, 1405, 1515, 1605, 1850, 3340.

Mass – spektr, m/z : 418 (M^+,100%), 403, 388, 387, 280, 251, 235, 226, 221, 201, 193, 183, 168, 161.

6.4.3. *Magnolia grandiflora L alkaloids*

Collected from the Botanical Garden of Botumi (the Republic of Abkhazia), we dried Magnolia grandiflora L plant, we mixed the crushed leaf (1 kg) with chlororoform and separated 4,8 g of ether, as well as 2,0 g of chloroform, a total of 5,8 g or a mixture of 0,58% alkaloids compared to the dry plant mass. We developed a mixture of 4,8 g of etheric alkaloids with chloroform and separated the crystals of

0,75 g of liriodene. We chromatographed the coarse solution in a silica colonic and separated it in a clean form by 0,105 g of anonaine , 0,20 g of remerin, 0,09 g of degidoremerin, 0,12 g of liriodene and 0,095 g of N-oxide remerin. All isolated alkaloids are known bases, and we identified them by comparing them directly with samples isolated from the plant Liriodendron tulipifera L..

6.4.4. *Magnolia obavata Thunb alkaloids*

1 kg of dried and crushed M. we separated 4, 8 g (0,48 %) of a mixture of alkaloids from the leaves of the bovata Thunb plant. Aporfin bases as a result of chromatography of the resulting mixture of alkaloids in a silica colonic; anonaine , remerin, 2 units of oksoaporphins - liriodene, lanuginosine and New alkaloid isolaurelin N-oxide were isolated.

Transition from remerin to liriodenin. We put 25 ml of pyridine into the tube with a capacity of 4 ml and slightly cooled the tube with ice water (at 0oC) for 10 minutes without water we add 0,4 g of anhydrous chromium dioxide to the tube by spraying a dropper funnel and a mixer with a capacity of 10 ml. Then insist the mixture at room temperature for 20 minutes, stirring. 0,06 g of remerin 3 ml of pyridine dissolved solution through a dropper funnel and put-we leave the shdik and reaction mixture in the bruised cupboard for 44 hours. Formed precipitate, washed off with chloroform. By combining filtrate and washerite, we flew the solvents under vacuum. And the residue was dissolved in $CHCl_3$ and we took the reaction product in a 5% solution of HCl. We alkali the acidic solution with 25% ammonia solution and extract the free base with chloroform. We drove the solvent and passed the mold from the colon with sandal silica. Benzol-metanol (95:5) from Elio.t.273 -275 we have separated the color crystal from the old one. A mixture of liriodene with this oxidative property does not give a liquefaction depression.

Transition from remerin to degidroremerin. We dissolved 0,10 g of remerin in 5 ml of acetone, drip on it, stirring, adding 0,05 g of KMnO4 from 5 ml of acetone solution. We leave the reaction mixture in a dark place for 14 hours. Then we blew acetone at low pressure, which was formed with the help of a water absorbent, and passed the residue through a column of silica. We washed the colon with clean benzene, and the liquid as a result of throwing benzene. t. 88 – 90°C we formed equal crystals. With the oxidative yield of remerin, it is found that the deguremerin is exactly a homogeneous substance, liquid. t. and we have determined by IQ-spectra.

Oxidation of remerin. 25 ml of sifted Harden tooth in a circular tube dissolve 0,05 g of remerin in 5ml of alcohol, 2.5 ml of 30 % hydrogen peroxide in the solution we have added a solution. Installing a small reverse cooler into the tube, the reaction mixture-we left the man at room temperature for 3 a day. Then we add 5 ml of water to the mixture and dissolve the alcohol in a vacuum, rubbing the residual solution with 25% ammonia solution and a free base .we extract with chloroform and dry the extract in anhydrous sodium sulfate. Liquid as a result of driving chloroform and working the remaining residue in acetone. t. We formed a remerin N-oxide equal to 164-165oC.

Return of Remerin N-oxide. Dilute 0,05 g remerin N-oxide with 5 g zinc in 10 ml 1,5% li hydrochloric acid.t. 263 – 265oC gat most reaction product-we formed crystals of remerin N-oxide chloride. Directly comparing this chloride with remerin chloriderati, we found that they are exactly a homogeneous substance.

6.4.5. *Asimine trilabe L elgalaids*

We extracted the dried and crushed leaf (1 kg) of the plant Asimina triloba L, belonging to the Annonaceae family, by the usual method, with chloroform and formed a mixture of 0,86% alkaloids compared to 0,086 g or dry plant mass. 0,86 g of a mixture of alkaloids in a column with silica as a result of chromatography, we isolated 0,086 g of remerin (51), 0,06 g of asymylobin (55) and 0,10 g of liriodene(52). We took advantage of their true patterns in the identification of these alkaloids.

6.4.6. *Zantohxylum americanum Mill alkaloids*

1,0 kg of dried and crushed Zantohxylum americanum Mill (Rutaceae family) from the leaf of the plant 1,1 g (0,11 %) , from young branches (1 kg) we separated a mixture of 1,4 g (9,14%) of alkaloids. We isolated from the mixture 0,054 g of assimilobine(55), alkaloids from the young grass of the plant.

Skimmianin (62). We separated 1,1 g of crystalline base, made with acetone, a mixture of 0,20 g of alkaloids formed from the plant leaf. Unrestrained. t. 175 – 176° C, R_f 0,78 system 1. We directly compared this alkaloid with the actual sample of skianianin, which is separated from the haplophyllum perforatum plant, and found that they are exactly the same alkaloid.

6.4.7. *Çalycanthus floridus L elkaloids*

As a result of the usual chloroform extraction from the leaves of the plant Calycanthus floridus L (0,5 kg), we isolated a mixture of 0,90 g (0,18 %) of alkaloids. A mixture of formed alkaloids shows three clear spots in the System 1 of silica-containing solutions equal to Rf 0,52; 0,33; 0,21.

Folikantin (61). Chromatography of 0,9 g of a mixture of alkaloids in a column with silica. t. 120 -122° C we separated the basis from which. R_f 0,52 system 1. By comparing the properties of these alkaloids with the properties of the folicant listed in the literature, we found that they are a homogeneous substance.

UB – spektr, λ_{max}, nm: 255, 311 (lgε 4,22; 3,76); $\lambda_{max}^{spirt\ -HCl}$, nm: 246, 301 (lgε 3,99; 3,45);

Mass – spektr, m/z: 374 (M^+), 273, 271, 257, 245, 244, 243, 187, 186(100 %), 172, 171, 157, 144, 130, 117, 103.

6.4.8. *Securinega suffruticosa (Pall) Rend alkaloids*

0,5 kg of dried and ground Securinega suffruticosa (Pall) from the top of the Earth of the Rend plant by the usual method of extraction with chloroform 1,32 g of ether and 0,43 g of chloroform (or 0,35% of the plant mass) we separated a mixture of alkaloids.

Sekurinin (59). 1,32 g of ether part of the semi-crystalline Halide we separated 0,65 g of crystalline base as a result of processing a mixture of alkaloids with alcohol. Liquid of recrystallized alkaloid in alcohol. t. 138 – 140° C, $[\alpha]_D^{24}$ +105,5 (c 0,15; aseton).

Mass – spektr, m/z: 217 (M^+, 100%), 134, 133, 106, 84, 83.

Nitrate of Sekurinin. As a result of the drip addition of a 5% solution of nitric acid to the alcohol solution of securin, we formed nitric crystals of securin. Liquid of crystallized nitrate in alcohol. t. 203 -205° C.

6.5. *Verification of Verbascum songoricum Shrenk alkaloids*

6.5.1. *Distinguish and divide a mixture of alkaloids from the leaves of the verbascum songoricum Shrenk*

Collected during flowering from the Chimyon mountains in the Bostanlik District of Tashkent region, dried in a place without sun, moistened the crushed 5 kg Verbascum songoricum Shrenk plant with 10% ammonia solution and extracted with chloroform according to the usual method. As a result of the extraction, a mixture of alkaloids with 5,2 g of ether and 7,3 g of chloroform (in total 12,5 g or 0,25% of dry plant mass) was distinguished.

We treated 5,2 g ether part alkaloids mixture with petroley ether. Drive solvent, mainly, R_f 0,42 we formed 1,86 g of residue, consisting of one alkaloid equal to.

Anabazin (65). As a result of cleaning 1,86 g of the residue in the silica colon, we separated 1,63 g of liquid alkaloid. $[\alpha]_D$ – 76° (c 0,3; chloroform), benzol-etanol(4:1) in the system of solvents R_f 0,42 equal.

UF – spektr, λ_{max}, nm: 263 (lgε 3,18).

IQ – spektr, ν_{max}, sm^{-1}: 720, 1060, 1600,2920, 2980, 3200-3400.

Mass – spektr, m/z: 162(M^+), 161, 133,119,105,84(100%), 56, 42.

Anabazin peakrati. As a result of the drip addition of an alcoholic solution of picric acid to the alcohol solution of anabazine, we formed picrate crystals of anabazine. Liquid of picrate, crystallized again in water. t. 203 – 205°C.

Izoferul kislota amidi (67). We separated the crystals of 3,34 g isoferulic acid amide [0,65] as a result of working with acetone, a mixture of alkaloids of 94 g of which was insoluble in Petroley ether. Liquid of the substance recrystallized in acetone. t. 193 – 195°S, $[\alpha]_D$ ± 0° (c 0,3; etanol), benzol-etanol(4:1) in the system of solvents R_f 0,49.

UF – spektr, λ_{max}, nm: 218, 322 (lgε 4,30; 4,18)

IQ – spektr, ν_{max}, sm^{-1}: 815, 870, 1000, 1280, 1405, 1520, 1600, 1670 2850, 3160, 3340.

Mass – spektr, m/z: 193(M^+ , 100%), 192,161,149, 148, 135, 91, 77 .

Isomerulic acid amideolizolysis. We equipped the packaged tube with 0,5 g isoferulic acid amide and 10ml 20% sodium hydroxide solution with a reverse cooler. We boiled the reaction mixture in a sand bath for 4 hours We boiled the reaction mixture in a sand bath for 4 hours. Drive out the ether, R_f 0,15 Drive out the ether. Liquid of recrystallized acid in alcohol. t. 224-226°C.

Cinnamon acid amide (66). As a result of chromatography of the isoferolic acid amide crystals in the silica colonic of the isolated coarse solution, we isolated an additional 0,54 g of anabazine and 0,1 g of cinnamon acid amide. Liquid of the amino acid of cinnamon crystallized in ethanol. t. 147 -149°S, R_f 0,65 system of solvents: benzol-etanol (4:1).

We compared this substance directly with the amide of cinnamon acid, which is separated from the herb Verbascum nobile [90], and found that they are a homogeneous substance.

Separation of a mixture of chloroform alkaloids. As a result of working with boiling benzene 7,3 g of a mixture of alkaloids with chloroform 0,75 g of acetamide, we separated. We chromatographed 6,50 g of insoluble residue in benzene in a column in which silica was placed. We washed the colon with clean benzene, then with a mixture of benzene-ethanol (99:2), and (95:5) solvents. 0,75 g of liquid from pure benzene fiber. t. 128 – 130°C ga evenly separated benzamide crystals. Benzol-etanol (98:2) from elyuat 0,55 g plantagonin (**63**) va 0,75 g benzamid; benzol-etanol (98:5 from elyuat 1,05 g we separated amide (67) of isoferulic acid and 0,25 G indicain (64.

Plantagonin (63). Benzol-etanol (99:2) separated from elyuat and crystallized plantagonin liquid in acetone.t. 218 – 220°S, $[\alpha]_D + 38^o$ (c 0,2; etanol), benzol-etanol(4:1) in the system of solvents R_f 0,58.

Indikain (64). Benzol-etonal (98:5) elyuat through an aluminum oxide column, R_f 0,45 we separated the basis of the testicle, which is.

Indikain pikrat. Liquid as a result of the addition of solutions of indicain and picrinic acidspirtli. t. 150 -152°S we formed equal idikain pikrati crystals.

In the identification of Plantagonin and indicaine Alkaloids, we used the actual samples of these alkaloids extracted from the Pedicularis algae Rgl plant.

6.5. 2. Separation of alkaloids and phenols from the leaves of the Verbascum songoricum plant

2 kg dried and ground V. We extracted the leaves of the plant Songoricum Shrenk with chloroform. We drove chloroform from chloroform extract at low pressure, formed using a water absorbent, and condensed it to 0,5 liters. We processed the chloroform extract with 5% li sulfuric acid. We came to the alkaline environment with an acidic solution of soda, and we extracted the alkaloids with chloroform. Drove solvent 1,9 g (0,095% compared to the dry plant mass) separated a mixture of alkaloids.

We developed a mixture of 1,9 g of alkaloids with benzene, separated 1,2 g of anabazine (65) from the part passed to benzene. We chromatographed the insoluble alkaloid mixture in benzene through an aluminum oxide column, separated by 0,12 g plantagonin (63) and 0.1 g indicain (64.

Separation of phenolic carbonic acids. We separated 0,25 g of isoferol (73) acid from the solution with sulfuric acid by driving the chloroform out of the ishlangan chloroform solution and working the remaining residue with acetone. We chromatographed the "sheep" solution in a silica colonic, in which the crystals of isoferulic acid were separated, separated 0,085 g of coffee (72) and 0,2 g of cinnamon (71) acids.

Isophyric acid (73). In acetone, the conjugate of recrystallized acid. t. 224-226°ʿS, R_f 0,24, (YuQX, system benzol-etanol 4:1).

Coffee acid (72). Liquid crystals of yellowish color of crystallized acid in alcohol. t. 194-196°S, R_f 0,20, (YuQX, system of solvents benzol-etanol 4:1).

Dolchin acid (71). Unrestrained. t. 132-134°S (alcohol) , R_f 0,30 (YuQX, system benzol –etanol 4:1).

Hydrolysis of acid amides. We equipped the packaged tube with a reverse cooler with an amide of cinnamon acid (0,5) around 66 g and 10 ml 20% sodium hydroxide solution. We boiled the reaction mixture on a sand bath for 4 hours. Then the alkaline mixture was cooled, we brought the acid seal with a solution of hydrochloric acid (1:1) and extracted the reaction product with ether. Drive out the ether, R_f 0,30 we formed crystals of cinnamon acid, which is. Liquid of recrystallized acid in alcohol. t. 132-134°C. In the same way, we carried out the hydrolysis of the amides of coffee (68) and isoferol (67), synthesizing free coffee and isoferol acids.

Formation of acid amides. We developed cinnamon (71), coffee (72) and isoferol (73) acids with 25% ammonia solution and formed the amides of the corresponding acids.

6. 6. Some growing in the Republic of Guinea (Africa examination of alkaloids of tree plants

6.6.1. The presence of alkaloids in the composition of plants determination.

Oats are poured into a large tube or tube about 5 grams of a crushed dry plant sample taken for analysis, on top of which is poured 10% solution of sulfuric acid (bury the plant), after 4 – 5 hours, the acidic extract of the plant is filtered through a filter paper into another tube and added on top of the filter 1 – 2 drops The formation of sediment in the bun indicates the presence of alkaloids in the composition of the plant. Depending on the amount of precipitate formed, sharply +++ a lot of alkaloids, ++ a small amount of alkaloids preservative. + while very (incredibly) low alkaloid is divided into preserving plants.

6.6.2. *Separation of alkaloids from the leaves of Annona muricata L.*

We extracted the leaves of 2,5 kg Annona murcata L tree, collected from Konakri Botanical Bush and dried and crushed, according to the usual chloroform method (look at 61 - page). As a result of the extraction, we isolated a mixture of 2,15 g of ether, 0,975 g of chloroform alkaloids. Total 3,125 g (or 0,125 % relative to the dry mass of the plant leaf).

Phenol being a mixture of natural alkaloids. We chromatographed 0,95 g of a mixture of phenolic natural bases in a colon filled with silica gel in the “holistic” method. Kolonka first benzene, then benzene-ethanol (99:1), (98:2), (95:5) as a result of washing with it, we isolated alkaloids such as koklaurin (1), N-methylcoclaurine (2), asymylobine (55) and isoboldin (10).

Methylation of koklaurin by the method of Gess. We produced 0,035 g koklaurin in 64 –page Gess method exactly the same alkaloid as methyllab Rf and IQ-spectrum N-methylkoclauriniki.

Being a mixture of non-phenolic alkaloids. We chromatographed 1,20 g of a mixture of non-phenolic alkaloids in a silica colonic just like a mixture of phenolic-nature bases, separated anonaine, remerin, xylopine, isolaureline and liriodene in the diet. We identified isolated known alkaloids : anonain (50), remerin (51), isolaureline (56) and liriodene (52) directly compared with actual samples isolated from the liriodendron tulipifera L – tulip tree.

Xylopin (74). Benzol – etanol (92 : 2) from elyuat R_f 0,62 we separated the basis from which it was. Liquid crystallized base in acetone. t. 124 -126°C.

Transition from xylopine to izolaurelin. On the 51 –page Gess passed methyl xylophone to isolaureline.

6.6.3. Alkaloids from Annona senegalensis Pers leaf separation.

From the leaves of the Annona senegalensis Pers plant, we obtained a collection of alkaloids 0,095 % (compared to the dry plant mass) in the usual chloroform extract Naija. From this mixture of Alkaloids, we isolated a total of 9 alkaloids, dividing the alkaloids into phenolic and non-phenolic components, chromatography several times in the silica colon, as well as re-crystallization in the corresponding solvents. All of the separated bases are known alkaloids, and we used their actual patterns in the identification of these alkaloids.

6.6.4. Xylopia aethiopica A. Alkaloids from Rich leaf separation

Xylopia aethiopica A. belonging to the Annonaceae family. We extracted 3 kg of leaves of Rich plant harvested in may 2018 year by the classical method with chloroform and formed a mixture of 2,85% alkaloids compared to 0,095 g or dry plant mass.

As a result of chromatography of 2,85 g of a mixture of alkaloids in a silica colonic , we isolated koklaurin (1), N-methylcoclaurin(2), armepavin (60) and a new alkaloid xyloetiopin(79). We directly compared Koklaurin and N-methylcoclaurin with samples from Annona murikata L in comparison with the identification.

Armepavin (60). Bebzol - etanol (98:2) liquid of the base, separated from the fiber and crystallized in acetone. t. 146 – 148° C, R_f 0,54, system 1.

Xyloetiopin (79). Benzol – etanol (95:5) we separated from the elyuat fractions phenolic natures, optically active 0,045 g amorphous base, $[\alpha]_D$ -86° (etanol), R_f 0,23 system 1.

UB – spektr, λ_{max}, nm: 224, 286 (lgε 4,22; 3,70);
IQ – spektr, ν_{max}, sm^{-1}: 1145, 1240, 1585, 1605, 2845, 3200 -3450.

Mass – spektr, m/z: 315 (M^+, 1,5%), 299 $(M – 16)^+$, 206, 192 (100 %), 191, 177, 161, 107, 93.

Xyloetiopin withdrawal. We dissolved 0,035 g xyloethiopin in a solution of 4 ml of 10% sulfuric acid, put 2 small pieces of zinc and leave the mixture at room temperature for 18 hours. Then we filter the reaction mixture with 25% ammonia solution and extract it with efir. Liquid without ether. t. 177 – 178° C we separated the crystals of the product of an equal reaction. The liquefaction temperature of a mixture of N-methylcoclaurine crystals with the formed base did not depression.

Oxidation of N-methylcoclaurine. We dissolved 25 g n – methylcoclaurine in 0,035 ml of alcohol in a round tube of 30 ml of sifted tubers and added 2,5% solution of hydrogen peroxide to the solution. We put a small reverse cooler into the tube, leaving the reaction mixture at room temperature for 3 days. Then we added 4 ml of water to the mixture and blew the alcohol in a vacuum, bringing the residual solution to a medium (pH ≈ 9) with 25% ammonia solution. Isq from the solution

We extracted the free base with chloroform and dried the extract in anhydrous sodium sulfate. Driving chloroform, we formed the same basis as the value of R_f (0,23) xyloetiopinniki. Their IR-spectrum is also exactly the same as each other.

Conclusions

1. To date, this scientific paper has given a generalized review of scientific literature on the alkaloids of Cocculus laurifolius DC, as well as erythrine alkaloids belonging to the Menispermaceae family.

2. *From the leaf of the Cocculus laurifolius DC plant, belonging to the Menispermaceae family, 10 alkaloids were isolated. Of these, 5 alkaloids: koklafin, koklafin, kokulidin are new alkaloids belonging to the N – oxide erythrine group, koklaurifin, n-methylcoclaurifin are new alkaloids belonging to the 5-H-dibenzo [d, f] azozine group, their structure is determined as a result of the study of UB - , IQ–, PMR – and mass-spectra, as well as chemical properties.*

3. The Academy of Sciences of the Republic of Uzbekistan at the Tashkent Botanical Garden for the first time studied the quality of alkaloids of 60 species of rare and curative plants belonging to the introduced foreign flora and found out that they are 26 species of alkaloid-preserving plant.

4. The Academy of Sciences of the Republic of Uzbekistan gathered in Tashkent Botanical Garden Magnolia soulangeana, M. as a result of our first study of the alkaloids of the kobus plant, we were able to distinguish between two new alkaloids: oxolaurelin and izolaurelin N – oxide and lignan –seringarezinol.

5. The alkaloids of Magnolia grandiflora L and Magnolia obovata Thunb plants collected from the Botanical Garden of Botumi (Republic of Abkhazia) were first studied and 5 aporfinoid alka-loids from Magnolia grandiflora L plants : anonain, remerin, degidroremerin, liriodene and N-oxide remerin were isolated in pure induvidial form. Also from Magnolia obovata Trunb leaf 5 pieces of alkaloids : including two aporfin - anonain , remerin ; two oxoaporphine - lirodenine, lanuginosine and a new alkaloid - N-oxide isolaurelin were isolated .

6. *The alkaloids of a number of tree intruducients, such as Zanthoxylum americanum, Asimina triloba, Calycanthus floridus, were partially studied and the main alkaloids of these plants were isolated in pure form. As a result of the*

inspections, it was shown that these plants are rich in various structural and broad-spectrum biologically active compounds of quality and quantity, as well as in-depth study of their alkaloids in the future.

7. Securine belonging to the family of sutlamadash was allocated 0,13% (relative to the dry hanging mass) SecUR from the upper part of the Earth collected in the harvesting phase of the suffruticosa plant. It was found out that this medicinal plant can be grown widely in the conditions of Uzbekistan as a raw material for obtaining nitrate of biopreparate sekurinin, which is widely used in applied medicine.

8. More than 60 tree and shrub plant samples belonging to 23 families common to the flora of West-South Africa (Guinea-Bissau) were analyzed for the first time from the quality register to the alkaloids. Of these, 14 belong to the family, 32 plants are alkaloid preservatives, the following plants: Annona muricata L, Annona, senegalensis Rers, Xylopia aethopica A. Rich, Carica papaya L, Cocculus pendulus, Ziziphus mauritianus Lam, Fagara xanthoxyloides Lam, Solanum stramonium L were found to be alkaline.

- Annona muricata L, Annona, senegalensis Rers, Xylopia Aethopica A. belonging to the Annonaceae family, common in the Republic of Guinea Rich, alkaloids first studied;
- *Annona muricata L and Annona, senegalensis Rers were isolated and identified 9 benzyl tetragidroizoxinoline and aporfinoid alkaloids from each leaf of the plants*i;
- *Xylopia aethopica A. Rich, from the leaf of his Plant, 4 units of benzyl tetragidroizoxinoline alkaloids were distinguished. One of them revealed that xyloetiopin is a new alkaloid and it has a n-methylcoclaurine N-oxide structure.*

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28. **Rikhsivoy Ziyaev, Mamadou Sadialiou Sidibe, Olimjon Panjiev, Arziqul Panjiev, Zulfiya Ro'ziyeva, Sory Fofana** Alcaloïdes Des Annonacées : Alcaloïdes Des Des Feuilles et Des Écorces De l'Annona Senegalensis **MIDDLE EUROPEAN SCIENTIFIC BULLETIN** Volume:4,Issue:28,Sen:2021 **ISSN 2694-9970**

Applications
FAMILY OF PLANTS

Type of plants

Alkaloids number and name

Akaloid Number	The name of the alkaloid	page
1	Koklaurin	7, 18, 43, 44, 45, 47, 61
2	N-metilkoklaurin	7. 43, 45, 47, 61
3	Retikulin	7
4	Ladanidin	7
5	Koklanolin	7
6	Sebiferin (O-metilflavinantin)	7
7	Stefarin	7
8	N-metilstefarin	7
9	Norizoboldin	8, 18
10	Izoboldin	8, 18, 34, 44, 45, 61
11	Boldin	8
12	Disentren	8
13	Laurofolin	8
14	N-metilboldin	8
15	Magnoflorin (N-metilizokoridin)	8
16	Menisperin (N-metilizokoridin)	8
17	Tilizokoridin	8
18	Stefolidin	8
19	Trilobin	9
20	Koksulin	9
21	Koksulinin	9
22	Koklaurifin	9, 18, 22, 24, 55

Akaloid Number	The name of the alkaloid	page
23	N-metilkoklaurifin	9, 18, 22, 23, 24, 56
24	Laurifonin	10
25	Laurifin	10
26	Laurifinin	10
27	Kokulin	10, 13, 16, 18, 34, 54
28	Kokulidin	10, 13, 16, 18, 24,55
29	Koklafin	10, 14, 18, 19, 54
30	Koklafinin	10, 14, 18, 19,22, 55
31	Kokulidin N-oksidi	10, 14, 18, 19,21, 56
32	Digidroerizodin	10
33	Izokokkulin	11, 14
34	Izokokkulidin	11, 14
35	Kokkuvin	11, 15, 16
36	Kokkuvinin	11, 15. 16
37	Kokkulitin	11, 14
38	Kokkulitinin	11, 14
39	Tetragidroerizotrin	11
40	Kokkulimin	11
41	Kokkulidinon	12. 14
42	Kokkudienon	12
43	Kokkolin	12, 15
44	Kokkolinin	12, 15
45	Eritrokulin	12
46	Eritlaurin	12
47	Eritramid	12
48	Kokkulolidin	12

Akaloid Number	The name of the alkaloid	Page
49	Kokulidin iodmetilati	21
50	Anonain	28, 44, 45, 61
51	Remerin	28, 44, 45, 59, 61
52	Liriodenin	28, 45, 46, 59, 61
53	Oksolaurelin	28, 29, 57
54	Lanuginozin	30
55	Asimilobin	30, 34, 37, 44, 45, 59, 61
56	Izolaurelin	30, 32, 45, 45, 58, 61
57	Izolaurelin N-oksidi	30, 32, 58
58	Seringarezinol	32, 33, 58
59	Sekurinin	34, 37, 38, 60
60	Armepavin	35, 38, 48, 62
61	Folikantin	35, 38, 59
62	Skimmianin	34, 37, 59
74	Ksilopin	45, 46, 62
75	Nornutsiferin	47
76	Nutsiferin	47
77	Remerin N-oksidi	47
78	Lizikamin	4
79	Ksiloetiopin	48, 49, 63
80	Karpain	51
63	Plantagonin	40,41, 65
64	Indikain	40, 41, 65,66
65	Anabazin	40,41, 64,65
66	Dolchin kislota amidi	40,41,65
67	Izoferul kislota amidi	40,41,64

Akaloid Number	The name of the alkaloid	Page
68	Kofe kislota amidi	40,41
69	Benzoy kislota amidi	40
70	Benzoy kislota	41
71	Dolchin kislota	41,66,67
72	Kofe kislota	41,42,66,67
73	Izoferul kislota	41,42. 66.67

Alkaloidlar nomi, raqami va bet

The name of the alkaloid	Akaloid Number	Page
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Anonain	50	28, 44, 45, 61
Armepavin	60	35, 38, 48, 62
Asimilobin	55	30, 34, 37, 44, 45, 59, 61
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Benzoy kislota amidi	69	40
Boldin	11	8
Digidroerizodin	32	10
Disentren	12	8
Dolchin kislota	71	41,66,67
Dolchin kislota amidi	66	40,41,65
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Eritramid	47	12
Eritrokulin	45	12
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Kokkolinin	44	12, 15
Kokkudienon	42	12
Kokkulidinon	41	12. 14
Kokkulimin	40	11
Kokkulitin	37	11, 14
Kokkulitinin	38	11, 14
Kokkulolidin	48	12
Kokkuvin	35	11, 15, 16
Kokkuvinin	36	11, 15. 16
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Koklafinin	30	10, 14, 18, 19,22, 55
Koklanolin	5	7
Koklaurifin	22	9, 18, 22, 24, 55
Koklaurin	1	7, 18, 43, 44, 45, 47, 61
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Koksulinin	21	9
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Ksilopin	74	45, 46, 62
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Lanuginozin	54	30
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Laurifinin	26	10
Laurifonin	24	10
Laurofolin	13	8

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Norizoboldin	9	8, 18
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Nutsiferin	76	47
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Plantagonin	63	40,41,65
Remerin	51	28, 44, 45, 59, 61
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Applications