The seeds of the red ash contain 58.5% of kernel and the weight of 1000 seeds is 36.5 g, the oil content of the kernel being 24%; the seeds of the green ash have 48.5% of kernel, the weight of 1000 seeds is 82–85 g, and the oil content of the kernel is 25.8%.

The physical and chemical properties of the oils of these species of ash are given in the table.

The following results show the fatty acid composition of the oils:

Fatty acids	Red ash	Green ash
Saturated	5.68	5.53
Oleic	47.22	42.75
Linoleic	47.10	50.22
Dienic acids with conjugated double bonds	-	1.50

Among the saturated fatty acids of the oil of the ash seeds have been found palmitic and stearic, and in small amounts, arachidic, behenic, lignoceric, and cerotic acids.

The oil is characterized by a high content of unsaponifiable substances. From the mixture of the latter was isolated 2.5–3% of white crystals with mp 68–69° C which, on the basis of elementary analysis and IR spectra, are heneicosyl alcohol, $CH_3(CH_2)_{19}CH_2OH$. In addition, we have obtained 5.7% of a substance with mp 135–136° C which in admixture with β-sitosterol gave no depression of the melting point. The unsaponifiable matter also contains aldehydes the nature of which has not been established.

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16 January 1968

Institute of the Chemistry of Plant Substances AS UzSSR

UDC 547.633

ANTHRAQUINONE PIGMENTS OF RUMEX RECHINGERIANUS

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Khimiya Prirodnykh Soedinenii, Vol. 4, No. 3, pp. 188–189, 1968

We have studied the roots and seeds of Rumex rechingerianus collected in September 1966 in the foothills of the Trans-Ili Ala-Tau.

Substance from the roots and seeds	Mp, °C	Content, % by weight of absolutely dry material	
		in the roots	in the seeds
Chrysophanol (I)	196	0.57	0.29
Frangula-emodin (II)	256	0.11	0.03
Chrysophanein (III)	245	0.45	0.08
Glucofrangulin (IV)	190	0.07	0.02

The anthraquinone pigments were extracted by treatment of the air-dry raw material with a mixture of benzene and ethanol (20:1) and with methanol. The benzene–ethanol extract was separated by chromatography on a mixture of magnesium carbonate and silica gel [1]; substances I and II were isolated. The methanolic extract, by chromatography on finely disperse Kapron [~Nylon] powder and elution with dilute methanol, gave substances (III) and (IV); the same substances were obtained from the roots and from the seeds (see table).

These substances were identified with known samples [1, 2]. The properties of chrysophanein and glucofrangulin were also confirmed by the products of acid hydrolysis.

New ethers of chrysophanol and frangula-emodin have been obtained: the dipropyl ether of chrysophanol (1,8-dipropoxy-3-methylanthraquinone), $C_{21}H_{22}O_4$, mp 106° C, yield 87.1%; the diisobutyl ether of chrysophanol (1,8-diisobutoxy-3-methylanthraquinone), $C_{23}H_{26}O_4$, mp 126° C, yield 89.3%; the tripropyl ether of frangula-emodin (1,6,8-tripropoxy-3-methylanthraquinone), $C_{24}H_{28}O_5$, mp 125° C, yield 86.7%; and the triisobutyl ether of frangula-emodin (1,6,8-triisobutoxy-3-methylanthraquinone), $C_{27}H_{34}O_5$, mp 142° C, yield 85.9%.

The alkylation was carried out with an alkyl iodide in the presence of dry silver oxide, the mixture being boiled for 30 min [3]; the products were purified by chromatography from benzene on magnesium carbonate and by crystallization from petroleum ether (bp 80° C).

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29 November 1967

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UDC 547.587.51

THE DYNAMICS OF THE ACCUMULATION OF PSORALEN IN PSORALEA DRUPACEA

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Khimiya Prirodnykh Soedinenii, Vol. 4, No. 3, pp. 189-190, 1968

Psoralen has been studied previously and introduced into medical practice [1, 2].

We have investigated the dynamics of the accumulation of psoralen in P. drupacea [3] (according to the phases of development) collected in the territory of the Chimkent Oblast in 1966 (table).

Date of collection of the seeds	Phenophase of P. drupacea	Height of the plant, cm	Content of psoralen in absolutely dry plant, %				
			roots	stem	leaves	seeds	
						ripe	unripe
13.III	Before the beginning of the vegetation of the epigeal part	—	0.52	—	—	—	—
28.III	Early period of vegetation of the epigeal part	2—3	0.48	—	—	—	—
26.IV	Bud formation	20—25	0.46	0.13	—	—	—
28.V	Flowering	75—80	0.44	0.22	trace	—	—
13.VI	Beginning of fruit-bearing and flowering	80—100	0.39	0.11	0.06	—	0.63*
13.VII	Abundant fruit-bearing and end of flowering	80—100	0.32	0.10	trace	1.1*	—
20.VIII	End of fruit-bearing, flowering of second-order branches	80—100	0.38	0.10	„	1.0*	—
IX	End of vegetation of the epigeal part	80—100	0.57	0.10	„	—	0.70**
16.XI	„ „ „	—	0.57	—	—	—	—

*Seeds of first-order branches; **of second-order branches.

According to our observations, the beginning of the vegetation of the plant is at the end of March, flowering in the first days of May, continuing into July, and the seeds are ripe 30-40 days from the moment of flowering. The formation of second-order branches was found in the second half of August; flowering and fruit-bearing on these branches continued until the first autumn frosts.

The psoralen was extracted from the P. drupacea with 40% aqueous acetone with the subsequent removal of the organic component by evaporation. The precipitate that deposited was separated off and technical psoralen was ex-