

Short Communications

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THE FATTY ACIDS OF INDIGENOUS RESOURCES FOR POSSIBLE INDUSTRIAL APPLICATIONS

Part II.—Investigation of Some Species of Boraginaceae Family

MOHAMMAD ASHRAF, S.A. KHAN and M.K. BHATTY

PCSIR Laboratories, Lahore 16

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Cordia obliqua, *Cordia myxa* and *Cordia rothii*, N.O. *Boraginaceae*¹ grow wildly and are locally known as Lisura, Lisuri and Gondi respectively. The small pinkish fruits obtained from these trees contain a viscous sweet pulp and a very hard stone. The gelatinous edible pulp is much liked in the Punjab where these trees are largely found. The stones are discarded and find no use whatsoever.

In continuation of our general programme for finding newer sources of oils,² we have now investigated the above mentioned three species. Although the oil contents of these species are low but their significance becomes appreciable vis-a-vis the general fatty oil situation of Pakistan.³

Experimental

(a) *Examination of the Oils*.—Fresh fruits of the three varieties were macerated in ethanol for separating the stones from the pulp. The stones of *C. myxa*, *C. obliqua* and *C. rothii* were then washed with water, dried in shade at room temperature, pulverised to a fine mesh in an iron pestle and mortar and then extracted with petroleum ether (b.p. 40–60°C) by the swedish steel tube method.⁴ The extracts, on further treatment afforded transparent and light yellow oils whose percentages and various physical and chemical characteristics as determined by the usual standard procedures,⁵ are given in Table 1.

(b) *Analysis of the Constituent Fatty Acids of the Oils*.—The oils from the three species were separately saponified under conditions as described previously.⁶ The soap solutions were first treated with diethyl ether to remove the nonsaponifiable matters and then with 4N sulphuric acid. The fatty acids thus liberated were extracted with diethyl ether and dried (Na₂SO₄).

After removing the solvent, the fatty acids were converted into their methyl esters by diazomethane in ether solution at low temperature. These esters

TABLE 1.—PHYSICO-CHEMICAL CHARACTERISTICS OF THE SEED OILS OF THE SPECIES OF BORAGINACEAE FAMILY.

Value	<i>Cordia myxa</i>	<i>Cordia obliqua</i>	<i>Cordia rothii</i>
Refractive index at 30°C	1.468	1.473	1.472
Specific gravity at 30°C	0.929	0.910	0.945
Colour (Lovibond)	2.2 Yellow	0.8 Yellow	1.5 Yellow
	0.8 Red	0.1 Red	0.3 Red
Acid value	11.2	12.1	12.2
Iodine value	76.0	74.0	72.0
Saponification value	196.0	197.0	196.0
Non saponifiable matter%	4.0	3.5	3.8
% of oil	5.7	4.6	3.5

TABLE 2.—G.L.C. ANALYSIS OF THE OIL OF THE SPECIES OF BORAGINACEAE FAMILY.

Component	<i>C. obliqua</i>	<i>C. mixa</i>	<i>C. rothii</i>
C ₁₆ :0	27.2	27.8	29.6
C ₁₆ :1	traces	traces	traces
C ₁₈ :0	6.3	3.6	3.6
C ₁₈ :1	46.6	48.9	50.6
C ₁₈ :2	19.9	19.7	16.1

were analysed by vapour phase chromatography using a Radium Ionization Detector unit on a SEG Column (13% diethyl glycol succinate on chrome⁷ p W/W) at 190°C. The carrier gas was argon, flow rate 50 ml/min and the chart speed was maintained at 20 in/hr. The percentage composition and identity of the constituent fatty acids in each case were determined from the retention times and peak areas of methyl esters (Table 2).

References

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