

CHEMICAL PROPERTIES AND CHANGES DURING STORAGE OF SOME INDIAN RAY LIVER OILS*

RAY liver oils are used in leather industry and the yield of oil from fresh good livers ranges from 30-35%. About 4,500 tons of rays are landed annually on the Indian coast. The present note reports the results of investigations on the constants and storage conditions of ray liver oils as the available data about them are scanty.

The fresh livers from the rays landed at Uchipilli, Adirampatnam and Mandapam Camp during December to June 1957-58 were taken and boiled with sufficient quantity of water and the clean yellow oil was ladled and filtered. The yield of the clean yellow oil was 30% and the residual oil was 5%. After the removal of stearine by the cold clearing process the chemical constants were determined by the A.O.A.C. methods. The commercial samples collected at Adirampatnam are mixtures of liver oils of *Dasyatis sephen* and *Rhinoptera* sp. The constants for the liver oils extracted in the laboratory and that of the commercial samples are given in Table I, along with the constants for the Philippine Ray liver oils for comparison.

All the oil samples were stored in plain bottles at the room temperature (27-30° C.) and the iodine value, acid value, peroxide value and the free fatty acids were determined at regular intervals to study the extent of deterioration during the storage period. The results are given in Table II.

It is seen from Table I that the acid values and peroxide values are significant in the commercial oil samples which may be due to improper method of preparation. The liver oils obtained from the *Dasyatis* sp. possess the required characteristics for preparation of sulphonated products.¹ The results in Table II indicate that there is a gradual increase in the acid value, free fatty acids and the peroxide value of the oil during the 5 months storage period. The fall in the iodine value is also

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TABLE I
Physical and chemical constants of fresh ray liver oils

Constants	Ray liver oils extracted in the Laboratory		Mixture of liver oils from <i>Dasyatis sephen</i> + <i>Rhinoptera</i> sp.		Philippine Ray liver oils (2)		
	<i>Dasyatis</i> sp.	<i>Aetomylacus maculeletus</i>	Commercial sample I	Commercial sample II	<i>Dasyatis sephen</i>	<i>Dasyatis uarnak</i>	<i>Dasyatis kuhlii</i>
Oil content	.. 30.45%	30.35%	20.45%	20.45%	19.8%	30%	23.9%
Refractive index at 25° C.	.. 1.475	1.4660	1.470	1.4735	1.4721	1.4756	1.4700
Specific gravity at 25° C.	.. 0.92	0.907	0.920	0.912	..	..	..
Saponification value	.. 188	197.20	195.50	192.40	..	..	..
Iodine number (Hanus)	.. 140	68.63	120.30	134.1	168	188	170
Unsaponifiable matter	.. 1.64%	7.65%	1.78%	2.26%	4.8%	3.0%	7.6%
Acid value	.. 0.31	0.23	4.31	3.33	..	..	..
Water-soluble fatty acids	.. 0.70%	0.12%	0.195%	0.22%	..	..	..
Water-insoluble fatty acids	.. 95.5%	88.08%	84.55%	76.96%	..	..	..
Moisture	.. 0.1%	..	..	..	..	..	..
Colour of the oil	.. Golden yellow	Bright yellow	Light brown	Light brown	..	..	..
Peroxide value	.. Nil	Nil	2.30	3.40	..	..	..
Free fatty acids (expressed as Oleic)	.. 0.16	0.14	2.17	1.67	..	..	..

TABLE II
Changes during storage

Sample	Storage period (days)	Acid value	Free fatty acids (expressed as Oleic)	Iodine value (Hanus)	Peroxide value†	Remarks
Ray liver oil	.. 32	0.37	0.16	140	Nil	..
<i>Dasyatis</i> sp.	.. 76	0.57	0.19	134	Nil	..
	133	0.95	0.48	125	14.09	..
	150	0.96	0.49	124	15.0	..
<i>Aetomylacus maculeletus</i>	.. 60	0.34	0.17	67.04	11.53	..
	90	0.27	0.13	62.04	15.00	..
	120	0.72	0.36	65.98	20.16	..
Commercial sample I	.. 60	5.18	2.61	108.5	21.91	..
	90	6.33	3.19	102	49.53	Sample discarded
Commercial sample II	.. 60	3.45	1.74	132	20.17	..
	90	5.18	2.61	118.4	40.45	Sample discarded after 3 months

† Number of ml. of .002 N thioisulphate required for 1 gm. of fat.

significant during this period. Excepting the peroxide value of the oil, the values of other constants still agree with the constants required for the preparation of sulphonated oils for use in the leather industry even after 5 months storage. It is not clearly known whether the rancidity of the oil has any adverse effect for its use in the leather industry.

I am thankful to Dr. S. Jones for his keen interest in the investigation. I am also thankful to Shri N. K. Velankar for his suggestions.

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June 6, 1959.

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1. Nayudamma, V., *C.L.R.I. Bulletin*, 1956, 4.
2. William Hamm, S., *Research Report*, U.S. Printing Office, 1950, 23.

PRELIMINARY NOTE ON AORTIC AFFECTIONS WITH FILARIAL PARASITES IN LOCAL OVINES

So far the known records of filarial worms occurring in the aorta of Indian livestock are only those of *Onchocerca armillata* Railliet and Henry, 1909, in cattle and *Elcephora pœlii* (Vryburg, 1897) infestations in buffalo. The