

ably higher than 2 per cent., the maximum fixed in the Indian Pharmacopœial List. Most of the values range between 3 and 7. A lower limit of 3 and an upper limit of 7 would appear to be more reasonable for Indian oils. The N.N.R.<sup>2</sup> (1944) has also prescribed the limits between 3 and 6.

The unsaponifiable matter taken with the Saponification value and Iodine value, offer an important criterion for the purity of shark liver oil. The B.P.<sup>3</sup> permits  $\leq$  1.5 per cent. in cod liver oil and values between 7 and 13 for halibut liver oil. It was also found that no correlation existed between the vitamin A and unsaponifiable matter of shark liver oil.

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1. Indian Pharmacopœial List, 1946, Govt. of India Press, Civil Lines, Delhi. 2. New and Non-Official Remedies, 1944, Amer. Pharm. Assoc., Chicago. 3. British Pharmacopœia, 1932, General Medical Council, London. 4. *Ibid.*, p. 596.

#### EFFECT OF CENTRIFUGAL SPINNING ON THE SYNERESIS OF SODIUM OLEATE GELS IN PINENE

The kinetics of syneresis of sodium oleate gels in pinene is modified by changes in physical conditions and also by the addition of other substances.<sup>1,2</sup> The author has found that it is also modified considerably when these gels are subjected to centrifugal force.

Gels containing different amounts of sodium oleate in 10 c.c. of pinene, prepared in graduated glass test-tubes as described by Prasad and Hattiangdi,<sup>3</sup> were centrifuged at 30° C. for known intervals of time. The amount of the liquid exuded and the volume of the shrunken gel were noted. The percentage ratios of the liquid exuded to the total volume of the gel are given below.

TABLE I  
Effect of centrifugal force (2,000 r.p.m.) on syneresis of sodium oleate gels in pinene

Time (minutes)	Sodium oleate in gm.			
	0.05	0.10	0.15	0.20
0	..	..	..	..
5	55	45	35	26
10	67.5	54	42.5	35
15	72	58	48	38
20	73	62.5	51	40
25	73.5	63.5	52	41
30	73.5	64	52.5	41.5

It is seen from Table I that at a given speed of the centrifuge, the amount of the liquid exuded increases with time and reaches an almost constant value after about half an hour. The facile removal of the syneretic liquid initially indicates that it exists in a free state in the interfibrillary spaces, the remaining liquid which is not exuded being enclosed in a bound state inside the micelles. Further, the amount of the liquid exuded decreases as the soap con-

tent of the gel is increased, indicating thereby that the amount of the bound liquid has increased, due evidently to the increased aggregation of the gel micelles.

The relation between the soap content and the bound liquid was found to be linear. Prasad, Hattiangdi and Wagle<sup>4</sup> find that no gels are formed when the soap content is less than 0.020 gm.; hence, the aforesaid straight line has no real points in the concentration range, 0-0.020 gm.

The effect of the speed of the centrifugal spin is brought out in Table II.

TABLE II  
Effect of variation of centrifugal speed on syneresis of sodium oleate gels in pinene (Concentration of sodium oleate 0.10 gm.)

Time (minutes)	Centrifugal spin (r.p.m.)			
	0	750	1250	2000
10	0.95	2	5.5	54
15	1.3	4.5	13.5	58
25	1.9	7.5	20	63.5

It is seen that with an increase in the centrifugal speed, the amount of the liquid exuded increases, at first slowly and then rapidly. Therefore the indications are that large pressures are necessary for the removal of a major portion of the free liquid which is held by forces of attraction inside the gel system. It is probable that when very large pressures are applied some of the bound liquid could also be removed from the intermicellary spaces and exuded as a synereticum.

The author is grateful to Principal Dr. Mata Prasad for his kind interest in this investigation, and to the University of Bombay for the award of a Research Scholarship.

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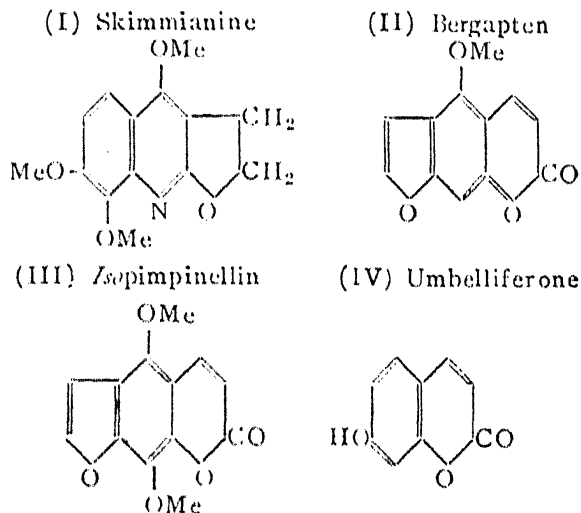
June 23, 1947.

1. Prasad, Hattiangdi and Adakar, *Proc. Indian Acad. Sci.*, 1945, **22**, 320. 2. Prasad, Hattiangdi and Mathur, *Ibid.*, 1945, **21**, 105. 3. Prasad and Hattiangdi, *Ibid.*, 1945, **21**, 1. 4. Prasad, Hattiangdi and Wagle (Communicated for publication).

#### ON THE ACTIVE PRINCIPLES ISOLATED FROM THE LEAVES AND THE BARK OF *SKIMMIA LAUREOLA* HOOK.

The leaves of *Skimmia laurocola* Hook, the common fodder plant of India, has been examined chemically by various workers,<sup>1,7</sup> and have been found to contain (1) an alkaloid-skimmianine, m.p. 176-177° (1), (2) a furocoumarin—bergapten, m.p. 188-190°, a neutral substance—skimmiol, m.p. 279-281° C., and essential oils. While isolating skimmianine from the leaves of *Skimmia laurocola* for collecting an authentic sample of the alkaloid, it has been found by the authors that the leaves contain three more active principles which have not been recorded by previous workers. One of them is isopimpinellin (III); a dimethoxy-furo-

coumarin (m.p. 150°; yield, 0.005 per cent.), the second one is umbelliferone (IV) (m.p. 230°; yield, 0.1 per cent.), and the third active principle is a neutral compound, C<sub>11</sub>H<sub>10</sub>O<sub>2</sub> (m.p. 258-260° C.; yield, 0.02 per cent.) which has been hitherto unknown. This neutral compound has been called laureoline.



The bark of this species which has not been investigated as yet has also been studied. From the bark all the coumarins, namely, bergapten (II) (m.p. 188°; yield, 0.02 per cent.), isopimpinellin (III) (m.p. 150°; yield, 0.003 per cent.) and umbelliferone (IV) (m.p. 230°; yield, 0.05 per cent.), and the same alkaloid skimmianine (I) (m.p. 177°; yield, 0.001 per cent.) and laureoline too (m.p. 258-260°; yield, 0.01 per cent.) have been isolated in the pure state. Further work is in progress, the details of which will be published elsewhere.

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1. Roure-Bertrand Fils, *Bull.*, 1920, Oct. 34, 2. Schimmel, *Ber.*, 1920, Apr., 46. 3. Simonsen, *J. Soc. Chem. Ind.*, 1921, 40, T. 126. 4. Schimmel, I. C., *Constanten*, 1923, 72. 5. Schimmel and Co-Rept., 1932, 5-73. 6. Wienhaus and Rajdhan, *J. Prakt. Chem.*, 1936, 147, 113. 7. Chopra, Chatterjee, Dey and Ghosh, *Indian J. Med. Research*, 1938, 26, 481.

### ANTIBACTERIAL ACTIVITY OF p-AMINO-BENZENE-PHOSPHONIC ACID (PHOSPHANILIC ACID) AND ITS DERIVATIVES

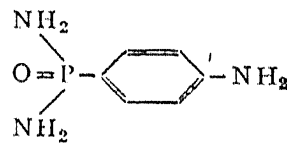
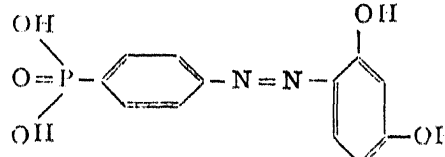
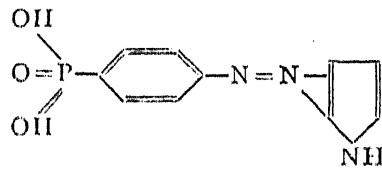
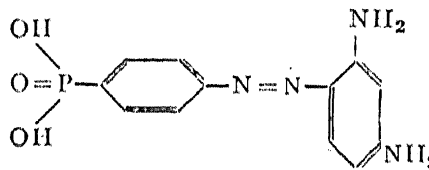
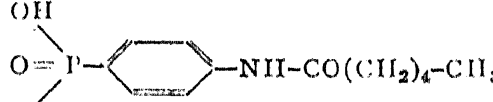
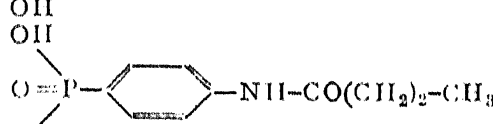
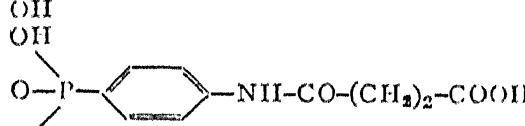
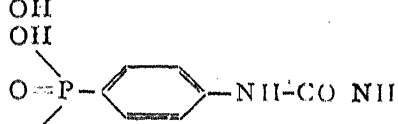
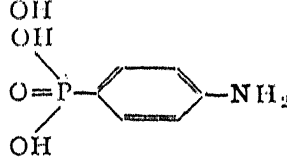
A RECENT note of Klotz and Morrison<sup>1</sup> describes the anti-bacterial activity of p-amino-benzene-phosphinous acid on *E. coli*. The activity was found to be slightly less than that of sulphanimide.

Bhide and Limaye<sup>2</sup> prepared a number of derivatives of phosphanilic acid, whose anti-bacterial activity is briefly given in this note.

The method of testing was the Heatley cup method.<sup>3</sup> As the substances used were insoluble in water, their solutions in sodium bicarbonate were used. Laboratory cultures of the follow-

ing organisms were used: (i) *E. coli*, (ii) *Staphylococcus aureus*, (iii) *Typhi murium* (O), (iv) *Corynebacterium xerosis* and (v) Boyd II. The results are given in Table I.

TABLE I  
Inhibitory activity of some derivatives of Phosphanilic Acid at 1 per cent. concentration of the compound

Compound	Zone of inhibition in mms.	
	<i>E. coli</i>	<i>Staphylococcus aureus</i>
	5	12
	6	6
	2	0.0
	2	0.0
	1	1
	2	0.0
	4	1
	2	0.0
	No clear zone: very little growth for 12	12