

TABLE I

Sl. No.	Compound	mp. °C.	Calculated			Found		
			C	H	N	C	H	N
1	4'-Methoxy-7-aminoflavone ..	195	71.9	4.8	5.2	71.8	4.4	5.3
2	2-Hydroxy-4-acetamino- <i>o</i> -veratroyl acetophenone ..	196	63.9	5.3	3.9	63.9	5.3	4.1
3	3', 4'-Dimethoxy-7-aminoflavone ..	222	68.7	5.0	4.7	68.9	5.5	5.0
4	2-Hydroxy-4-acetamino- <i>o</i> -galloyl acetophenone ..	196	62.0	5.4	3.6	62.3	5.6	3.9
5	3', 4', 5'-Trimethoxy-7-aminoflavone ..	272	66.0	5.1	4.2	66.3	5.3	4.5
6	3-Methyl-7-acetaminoflavone ..	279	73.7	5.1	4.8	73.8	5.3	4.6
7	3-Methyl-7-aminoflavone ..	211	76.5	5.4	5.5	76.5	5.8	6.1
8	3', 4'-Dimethoxy-3-methyl-7-acetaminoflavone ..	221	68.0	5.4	4.0	67.9	5.3	4.2
9	3', 4'-Dimethoxy-3-methyl-7-aminoflavone ..	232	69.5	5.43	4.5	69.7	5.6	4.4
10	3', 4', 5'-Trimethoxy-3-methyl-7-acetaminoflavone ..	241	65.8	5.5	3.7	65.9	5.0	3.7
11	3', 4', 5'-Trimethoxy-3-methyl-7-aminoflavone ..	215	67.1	5.6	4.1	67.0	5.1	4.5

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1. Bapat and Venkataraman, *Proc. Ind. Acad. Sci.*, 1955, 42A, 336.
2. Kidd, *J. Chem. Soc.*, 1962, p. 5121.

### COMPOSITION OF THALLOUS-PHENOLSULPHONATE COMPLEX

SOME complexes of thallium (I) with aromatic acids have been studied by Sahu *et al.*<sup>1-3</sup> but thallos-phenolsulphonate complex has not been cited in the literature up to date. We have therefore taken up the present investigation by measuring the resistance of the solution.

E. Merck sample of thallos nitrate and B.D.H. make sodium salt of phenolsulphonic acid (Na-PSA) were used. Preparation of all solutions and their dilution were done with double distilled water. For resistance measurement RADART R.C. Bridge type 432 A and dip type conductivity cell were used. All measurements were done at a temperature of 28°C.

The composition was first studied by mono-variation<sup>4</sup> method. M/50 and M/100 equimolar solutions were used. The volume of thallos nitrate solution was kept constant to 10 ml. and total volume maintained at 40 ml. Observed resistances plotted against the volumes of added Na-PSA gave well-defined breaks for 10 ml. of the ligand showing 1:1 composition of the complex.

The composition was further confirmed by Job's<sup>5</sup> continued variation method. M/100 and M/125 equimolar solutions were mixed. Metal and ligand solutions were mixed ranging from 100% metal and 0% ligand to 0% metal and

100% ligand. In both the cases graph for the observed resistance against the per cent of ligand gave minima at 50% each of the metal and ligand solution confirming 1:1 composition of the complex.

The 1:1 composition was again confirmed by titrating the complex with sodium hydroxide. M/50 equimolar metal and ligand solutions were mixed in 1:1, 1:2 and 1:3 ratios. Various samples of these mixtures, after the attainment of equilibrium, were titrated with M/50 sodium hydroxide. In all the three cases only one significant break was obtained (Fig. 1), corresponding to one equivalent of the alkali. As

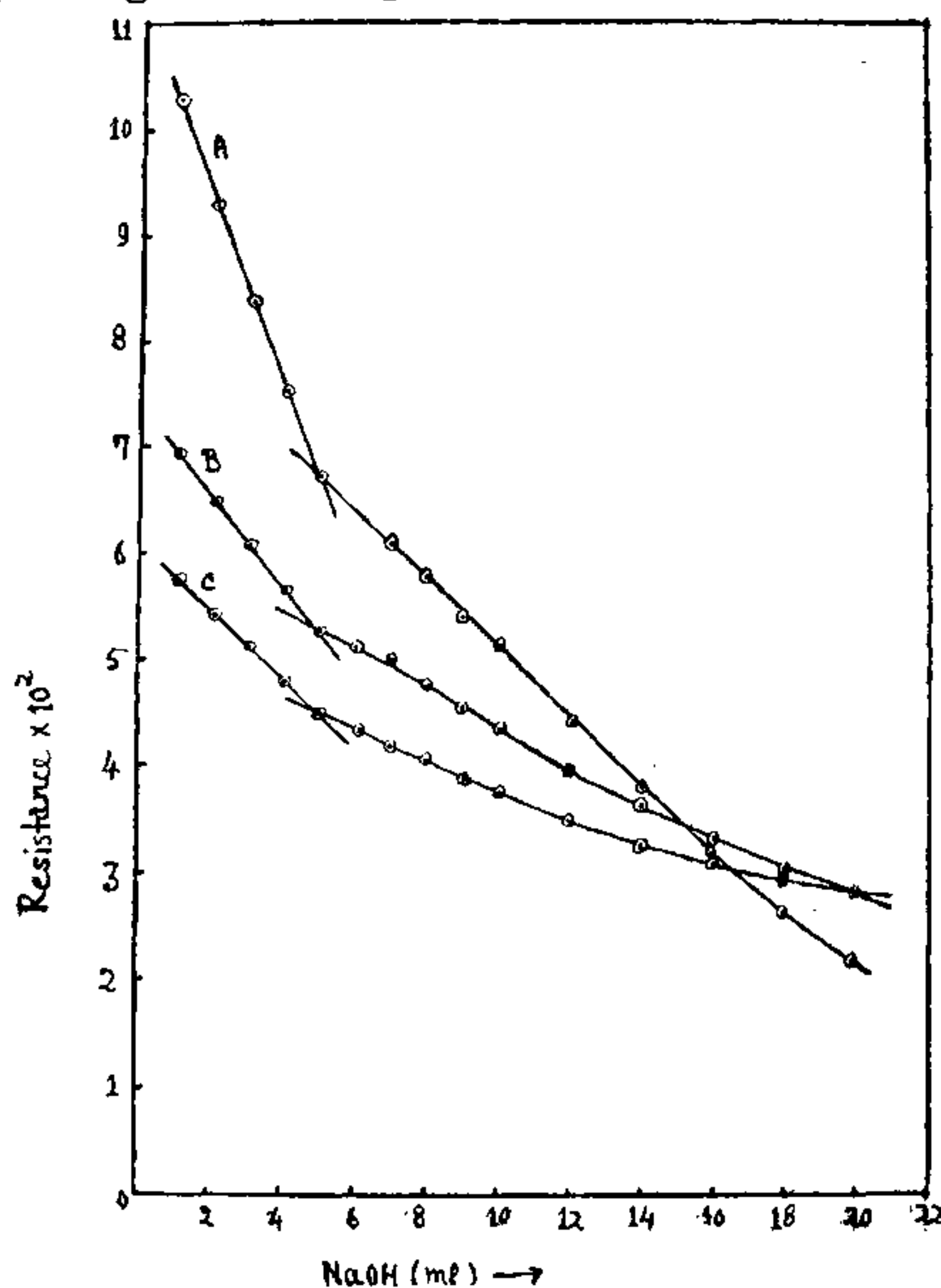


FIG. 1. A=1:1, B=1:2, C=1:3 mixtures of metal and ligand, titrated with M/50 NaOH,

there is only one replaceable hydrogen atom in the ligand, the break at one equivalence of alkali suggests 1:1 complex in the system.

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Mesra (Ranchi), Bihar, April 12, 1967.

1. Sahu, Saxena and Bhattacharya, *J. Indian Chem. Soc.*, 1962, **39** (10).
2. — and Bhattacharya, *Ibid.*, 1964, **41** (10).
3. — and —, "Madhya Bharati," *Jour. of the University of Saugar*, 1964, **11-13** (11-13).
4. Khan and Sen, *Proc. Ind Acad. Sci.*, 1959, **49 A**, 226.
5. Job, P., *Compt. Rend.*, 1925, **180**, 928.

### ISOVITEXIN FROM THE SEEDS OF *CROTALARIA ANAGYROIDES*

VERY recently Bhatia and Seshadri<sup>1</sup> have reviewed the distribution of C-glycosides occurring in nature, their special structures and biogenesis. According to Wagner,<sup>2</sup> about thirty different plant sources for flavonoid C-glycosides are so far known and these compounds are found in all parts of plants (there is no mention of seeds). In continuation of our earlier work<sup>3</sup> on the isolation of orientin and iso-orientin from the seeds of *Crotalaria laburnifolia* we give below in brief the results of our study of the seeds of *Crotalaria anagyroides* H. B. and K. (Family: Leguminosae) for flavonoid compounds.

Fresh mature seeds of *C. anagyroides* growing in Pondicherry were crushed in a glass pestle and mortar and extracted four times with hot ethanol (80%) under reflux and the total extract concentrated *in vacuo* till all the alcohol was removed. The aqueous concentrate was repeatedly shaken with light petroleum, ether, ethyl acetate and methyl ethyl ketone in succession. The fatty matter and lipid pigments (carotenoid and chlorophyll) were all removed by light petroleum and ether, and the subsequent ethyl acetate and methyl ethyl ketone layers contained flavonoid glycosides. The yellow solid residue from the ethyl acetate extract was crystallized twice from hot methanol, when yellow needles melting at 230-32° were obtained; yield 0.5% on fresh weight basis. It gave all the tests for flavonoid glycosides, but could not be hydrolysed with 7% sulphuric acid (aqueous alcoholic medium) in 8 hours or with 25% hydrochloric acid in 2 hours, indicating that the pigment was not an O-glycoside. On treatment with hydriodic acid in phenol, a yellow product not melting below 300° was obtained. This aglucone was identified as apigenin by its typical colour reactions and paper chromatography

in different solvent systems,<sup>4,5</sup> and through its acetate, m.p. 181-82°. Direct comparison was also made with an authentic sample of the compound.

The glycoside, m.p. 230-32°, was identified as isovitexin, 6-c-glucosyl apigenin by means of typical colour reactions, behaviour under ultraviolet light, paper (circular and ascending) chromatography in different solvent systems.<sup>4-6</sup> The identity was confirmed by direct comparison with an authentic sample of the compound.

The residue from the methyl ethyl ketone layer was also not hydrolysable with mineral acid indicating thereby that it was another C-glycoside. No crystalline pigment could be isolated, but the presence of vitexin, 8-c-glucosyl apigenin was established by colour reactions, and paper chromatography in different solvent systems<sup>4-6</sup> and comparison with an authentic sample of the compound.

It may be mentioned here that this is the first report regarding the isolation of isovitexin from the seeds of *C. anagyroides*. It is also interesting that the yield of the glycoflavonoid is the highest reported so far from any plant source.

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Pondicherry-6, April 1, 1967.

1. Bhatia, V. K. and Seshadri, T. R., *Curr. Sci.*, 1967, **36**, 111.
2. Wagner, H., In *Comparative Phytochemistry*, Ed. Swain, T., Academic Press, New York, 1966, p. 309.
3. Subramanian, S. S. and Nagarajan, S., *Curr. Sci.*, 1967, **36**, 364.
4. Seikel, M. K. and Geissman, T. A., *Arch. Biochem. Biophys.*, 1957, **71**, 17.
5. Bhatia, V. K., Gupta, S. R. and Seshadri, T. R., *Phytochemistry*, 1966, **5**, 177.
6. Seikel, M. K., Juliana, H. S. and Feldman, L., *Ibid.*, 1966, **5**, 439.

### DETECTION OF RUBBERSEED OIL IN EDIBLE OILS BY PAPER CHROMATOGRAPHY

THE seeds of the rubber tree, *Hevea brasiliensis*, yield a semi-drying oil which is reported to have come into use recently as an adulterant of edible oils. The analytical characteristics of the oil (Table I) do not differ sufficiently from those of the common edible oils to enable the