

A COLOUR TEST TO DISTINGUISH BETWEEN THE FRUITS OF *ILLICIUM VERUM* AND *ILLICIUM ANISATUM* L.

BY S. E. PHANG, M. C. DUTT AND THNG SOON TEE

From the Government Department of Chemistry, Outran Road, Singapore

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A simple colorimetric method to differentiate the non-poisonous Chinese Star Anise from the poisonous Japanese Star Anise is described.

THE fruit of the plant *Illicium verum* (Chinese Star Anise) is widely used as a flavour agent in curries, medicaments and meat dishes in South East Asian countries. There also exists a different specie of the plant, *Illicium anisatum* L. producing the fruit known as skikimmi or skimmi fruits (Japanese Star Anise). Its toxic symptoms have been reported by Guerero (1916). Occasionally, these fruits are substituted for those of non-poisonous Chinese Star Anise, and their ingestion has led to acute poisoning often resulting in death. Greenish (1909) described a means of distinguishing the poisonous and non-poisonous species by their physical appearance, odour and taste. Wagenaar (1936) described the microscopical differences between the two species. Unfortunately, star anise is usually sold in powder form, mixed with other condiments such as clove, cinnamon bark, ginger and pepper, so that such a physical identification is difficult and sometimes impossible. In such instances the need for a chemical method of identification to differentiate between these two species of Star Anise is essential.

We have modified the method of Wagenaar (1936) mainly by using a preliminary steam distillation procedure and by substituting orthophosphoric acid for sulphuric acid during colour development to prevent charring.

Isolation and Purification

Steam distil about 5 g. of the powdered sample mixture and collect about 100 ml. of the distillate. Acidify the distillate with 1-2 drops of dilute hydrochloric acid and extract with an equal volume of ether. Shake the ether extract with 3×10 ml. of 0.1N sodium hydroxide, rejecting the alkaline aqueous extract each time. Evaporate the ether extract on a water bath to 2-3 ml. and then at 30° until the odour of ether has disappeared. Dissolve the residue in 1-2 ml. of ethanol (95 per cent) for the colour test.

Colour Development

Introduce 3 ml. of orthophosphoric acid into a test tube and add 1-2 mg. of phloroglucinol. Shake the mixture for 30 sec. and add the ethanolic solution of the extract dropwise with shaking until a slight yellow colour appears. If the yellow colour changes to pink within 5-10 min. Chinese Star Anise is present. The pink colour intensifies on standing. Japanese Star Anise gives only a yellow colour which remains

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unchanged. With mixtures of powdered condiments containing star anise powder, Chinese Star Anise gives an orange red colour instead of pink, while Japanese variety still remains yellow. The test cannot detect with certainty a mixture of the two varieties because the orange red coloration of the Chinese Star Anise masks the yellow colour developed by the Japanese variety.

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