

DETECTION OF ADULTERANTS IN POWDERED RHIZOMES OF *CURCUMA LONGA* L. (HALDI)

Five market samples of powdered rhizomes of *Curcuma longa* L. (Haldi) have been compared with the authentic sample prepared in the laboratory with a view to detect the adulterants. Microscopical studies showed the presence of distinct starch granules of rice flour in the market samples. The TLC studies revealed the presence of metanil yellow, the prohibited dye suspected to cause cancer in market samples.

There are pertinent references in Ayurvedic, Homoeopathic (Das, 1974) and Unani (Bano, 1977) literature about the use of *Curcuma longa* L. (Haldi) in various diseases. The rhizome of this plant has got germicidal and anti-inflammatory properties and is freely used in our food. In view of the common use of Haldi as spices and condiments in every house, a random check up of the powdered samples available in Calcutta market has been carried out in the present investigation for detection of adulterants.

EXPERIMENTAL

Five samples of turmeric powder (Haldi) were collected from different shops of Calcutta. The rhizomes of *Curcuma longa* L. were collected and identified as per specifications of Datta and Mukherji (1950). The identified rhizomes were ground to a fine powder and used as a reference sample. The powder was then passed through No. 120 BS sieve and cleared with chloral hydrate for microscopical studies.

For TLC studies 10 mg of each sample was soaked in 10 ml ethanol for 30 minutes. Silica-gel-G plates (250 μ thickness) were prepared as per method described by Stahl (1965). Alcoholic extracts of different samples, .001% of metanil yellow solution and aqueous solution of powdered rice were spotted separately on TLC plates. The solvent used for developing the plate was a

mixture of Chloroform, Benzene and 96% ethanol (45: 45: 10). After development the plate was sprayed with acetic anhydride and sulphuric acid solution (1: 9) and examined under long wave U. V. lamp.

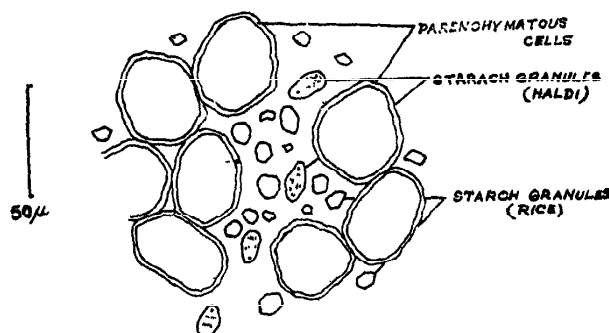


Fig. 1. Showing presence of starch granules of rice in a market sample of Turmeric powder

RESULTS

The results of thin layer chromatographic analysis are shown in Table 1. Only three spots were visualised in the reference sample. These were identified as bisdesmethoxycurcumin (Rf 0.2) desmethoxycurcumin (Rf 0.38) and Curcumin (Rf 0.48) with the help of corresponding Rf values worked out by Stahl (1973). Metanil yellow (Rf .007) and rice extract (Rf 0.001) gave light yellowish red and light red spots respectively, after treatment with acetic anhydride-sulphuric acid. In four market samples, spots corresponding to rice extract and metanil yellow were observed. It may be mentioned that metanil yellow is a prohibited dye suspected to cause cancer. Presence of metanil yellow was also confirmed by chemical tests as described by Woodman (1931).

In microscopical studies starch granules of rice flour, which were distinct from the starch granules of *Curcuma longa*, were observed (Fig. 1).

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TABLE 1
TLC analysis of powdered samples of *Curcuma longa* L.

	No. of spots	Rf×100	Colour
Reference Standard	3	20, 38, 48	Bright orange, red salmon, Blood red respectively
Sample 1	3	20, 38, 48	—do—
Sample 2	5	20, 38, 48, 0.1, 0.7	Bright orange, red salmon, blood red, Light red, light yellowish red respectively
Sample 3	5	20, 38, 48, 0.1, 0.7	—do—
Sample 4	4	20, 38, 48, 0.1	—do—
Sample 5	5	20, 38, 48, 0.1, 0.7	—do—
Rice extract	1	0.1	Light red
Metanil yellow	1	0.7	Light yellowish red

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A NOTE ON *EUPHORBIA LACINIATA* (EUPHORBIACEAE) FROM INDIA

Panigrahi (1975) described *Euphorbia laciniata* as a 'new species', since the type of the illegitimate name, *Euphorbia fimbriata* Heyne ex Roth (1821), *non* Scopoli (1788), could not be traced, even in LE. He based the 'new species' on *Beddome* s. n. from the Tinnevalley Ghat, Tamil Nadu (holotype) and cited *Bhide* s. n. from Pimpalgaon, Nasik District, Maharashtra as the only other specimen (paratype) seen by

him in the Kew Herb. (K.) It has now been possible for us to locate another specimen viz. Barber 7027 collected on 25 April 1905 from 'Sakrable, Mysore Pr. (Karnataka) in Herb. CAL (397377). The specimen bears a note dated 'Kew, 11/VI/1913' by A. T. Gage which reads: "This is certainly not *E. rosea* Retz., but as far as I at present know an undescribed species. It has been collected at Pimpalgaon, Nasik Dis-