

With pectins, several workers have attempted to relate gel-forming capacity to some one factor—like degree of esterification⁸ or equivalent weight.⁶ The absence of methyl ester groups in tamarind seed preparation as also other recent evidence^{7, 10} would, however, suggest that there is possibly little correlation between jelly strength and methoxyl content.

Pectins have the peculiarity of possessing a variable equivalent weight or degree of acidity depending upon their extent of esterification.⁹ Tamarind seed meal preparation contains 20 milli-equivalents per cent. of free carboxyl groups. Whether these or the presence in it of albuminoids have any relation to its gel-setting property are being investigated as also its chemical composition through a study of its hydrolysis and oxidation products.

Department of Chemical Technology,
University of Bombay, H. R. NANJI.
Matunga Road, G. R. SAVUR.
Bombay 19. A. SREENIVASAN.
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¹ Ghose and Krishna, *Jour. Ind. Chem. Soc., Ind. and News Edn.*, 1942, **5**, 114. ² Ehrlich, summarized in *Abderhalden's Handb. biol. Arbeitsmeth. Abt. XI*, 1503, 1936; Schneider and Fritsch, *Ber.*, 1936, **69B**, 2537; Hirst and Jones, *Jour. Chem. Soc.*, 1939, 452, 454. ³ Nanji, Paton and Ling, *Jour. Soc. Chem. Ind.*, 1925, **44**, 253T. ⁴ Schryver and Haynes, *Biochem. Jour.*, 1916, **10**, 539; Tutin, *Biochem. Jour.*, 1922, **16**, 704. ⁵ Carre and Haynes, *Ibid.*, 1922, **16**, 60. ⁶ Link and Dickson, *Jour. Biol. Chem.*, 1930, **86**, 491. ⁷ McCready, Owens and Maclay, *Food Industries*, 1944, **16**, 794, 906, also *Ind. Eng. Chem.*, 1944, **36**, 936. ⁸ Buston and Nanji, *Biochem. Jour.*, 1932, **26**, 2090. Hinton, *Dept. Sci. and Ind. Res. (Brit.) Food Investgns, Special Reports*, No. **48**, 1939. ⁹ Hinton, *Biochem. Jour.*, 1940, **34**, 1211. ¹⁰ Bennison and Norris, *Ibid.*, 1939, **33**, 1443.

USE OF EVERS' MODIFIED BELLIER'S TEST FOR DETECTION OF ADULTERATION OF SESAME OIL WITH NIGER-SEED OIL (*Khursani*, *Kala-til, Surguja*)

In the course of our investigation regarding the detection of adulteration of sesame oil with various inferior edible oils in this city, we are generally confronted with admixture of sesame oil either with groundnut oil or niger-seed oil. This led us to apply successfully the Evers' modified Bellier's Test to ascertain proportion of groundnut oil adulteration in sesame oil. The same test is applied for the detection of niger-seed oil in sesame oil. The range between the turbidity temperatures of sesame oil and niger-seed oil is, however, small. The following are the results of turbidity temperatures and refractive indices at 40°C (Z.B.), corresponding to the different percentages of niger-seed oil present in sesame oil.

Approximate percentage of niger-seed oil present corresponding to temperatures of turbidity

Oil	Turbidity Temperature	Refr. Index at 40°C (Z, B)
Sesame	15-16	59.5-60
" + Nigerseed—		
Oil 25%	18	60.5
" + " 50%	19.5	61.0
" + " 75%	21	62.0
Niger-seed Oil	22.5	63.0

This test supplemented with refractive index enables the analyst to ascertain whether sesame oil is adulterated with groundnut oil or niger-seed oil and also to ascertain the proportion of the adulterant, because the refractive index of groundnut oil is lower (55.5) than that of sesame oil, while refractive index of niger-seed oil is higher than that of sesame oil. Even if admixture of sesame oil with groundnut and niger-seed oils has been so manipulated that it indicates the refractive index of pure sesame oil, the turbidity temperature of such a product will be much higher than that of pure sesame oil. Thus this test is very convenient and useful for routine analysis. In this part of the Province, niger-seed oil is frequently used for adulterating sesame oil, because the former is much cheaper than the latter.

Surat Borough Municipality,
Surat,
February 28, 1945.

C. M. DESAI.
A. H. PATEL.

THE UTILISATION OF SURPLUS RIVER WATER DURING THE MONSOON IN CROP PRODUCTION

DURING the monsoon Indian rivers run usually at flood levels, but owing to the maldistribution of rainfall many unirrigated areas frequently suffer extensive crop failure of the *kharif* (summer crops, such as rice, cotton, millets, pulses, maize, etc.) as well as of the *rabi* (winter crops, such as wheat, barley, gram, etc.) The cultivated area dependent on rainfall or *barani* conditions is about 161.18 million acres and is generally estimated to be about four-fifths of the total cultivated area of 208.72 million acres in India. In the unirrigated areas successful *rabi* crops such as wheat, barley, gram and other winter pulses as well as some oil-seeds depend on (a) adequate depth of moisture in the soil resulting from monsoon precipitation and (b) adequate moisture near the soil surface for seed germination at sowing time in late October or somewhat later. The failure of the winter crop in unirrigated areas may, therefore, arise from a failure of (a) or (b) or from both these causes. Failure of (b) means that the area cannot be sown, which means that the following winter rains will be wasted, as there will be no crop standing to utilize them. Experiments at Karnal and Delhi show that these failures can be prevented by the use of surplus river