The presence of peroxidases in tragacanth

SIR,—In both the Pharmacopoeia Nordica (1963) and the Pharmacopoeia Belge (Suppl. 1940) the monograph for Tragacanth includes a test for the exclusion of acacia based on the well known fact that acacia contains peroxidases which give a distinctive blue colour in the presence of benzidine and hydrogen peroxide. Exporters from this country have complained that samples of genuine powdered tragacanth, containing no acacia, have been rejected on the basis of this test and accordingly I have examined a number of samples of tragacanth by this method. While there is a large number of grades, those suitable for pharmaceutical use are known as "ribbon" and "flake". The former grade consists of translucent, thin white ribbons and certainly fits the description given in the British Pharmacopoeia (1963); some samples of "flake" may also fit the description. Nine samples of ribbon and nine samples of flake (kindly supplied by Kimpton Brothers Ltd.), together with some samples from our own stocks, were tested using benzidine and hydrogen peroxide, as described in the British Pharmacopoeia (1963) under "Acacia", and using *o*-tolidine and hydrogen peroxide in exactly similar conditions. For each test the reagents were added to a cold mucilage and then to a boiled and cooled mucilage to act as a control. Only four samples (all ribbon) gave no blue colour; all other samples gave colours ranging from greenish-blue to dark royal blue. This shows that genuine samples of tragacanth may contain peroxidases and that a test based on their presence is useless for detecting adulteration with acacia.

Parallel tests for starch were also carried out by adding known quantities of N/50 iodine to the mucilage being tested. It was noted that those samples giving no blue colour for peroxidases were also free from starch and that, in the other samples, the intensity of the colour for peroxidases was paralleled by the intensity of the colour for starch. Furthermore the viscosity of the mucilages appeared to vary inversely with the intensity of these colours. Since tragacanth is formed in the plant by a process of "gummosis" from the cell walls and the starch contents (Gentry, 1957), it would seem that the finest grades, producing mucilages of high viscosity, are formed when the gummosis process completely converts all the starch into gum and, at the same time, causes the peroxidases to disappear. The ability to detect these changes in the finished gum by the use of benzidine (or *o*-tolidine), iodine and viscosity measurements may be of importance other than pharmaceutically, as Roe (1959) has drawn attention to the fact that ribbon tragacanth, in contrast to flake, inhibits mouse ascites tumour growth. Ribbon gum appears to attach itself to the ascites tumour cell, causing damage to it (Galbraith, Mayhew & Roe, 1962) and producing mitotic inhibition and cytostasis. Heat de-activated tragacanth and karaya gum were shown to have no such effects (Mayhew & Roe, 1964, 1965).

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References

Galbraith, W., Mayhew, E. & Roe, E. M. F. (1962). *Br. J. Cancer*, **16**, 163–169.
Gentry, H. S. (1957). *Econ. Bot.*, **11**, 40–63.
Mayhew, E. & Roe, E. M. F. (1964). *Br. J. Cancer*, **18**, 537–542.
Mayhew, E. & Roe, E. M. F. (1965). *Jl R. microsc. Soc.*, **85**, 235–247.
Roe, E. M. F. (1959). *Nature, Lond.*, **184**, 1891.