

LETTER TO THE EDITOR

A Note on the Irritant Properties of Sorbic Acid in Ointments and Creams

SIR,—During the last few years nonionic surfactants have been increasingly used as solubilising agents and emulsifiers. It soon became apparent that the preservation of products containing these emulsifiers offered special problems. Numerous reports have shown that the antimicrobial activity of different preservatives, e.g., *p*-hydroxybenzoic acid esters, is diminished by the presence of polyoxyethylene sorbitan esters (Tween) and other nonionic surfactants. This inactivation has been attributed on the one hand to the formation of a complex between phenolic preservatives and the polyether structure of Tween^{1,2}, on the other to a solubilisation of the preservative in the micelles of the emulsifier^{3,4}, which causes a decrease in its activity.

In some papers it has been demonstrated that sorbic acid has a comparatively good antimicrobial effect also in the presence of nonionic emulsifiers^{2,4}. These observations have been confirmed at this laboratory, where sorbic acid has been employed with excellent results as a preservative for colloidal water dispersions of fat-soluble vitamins (A, D, E) as well as for ointments and creams of w/o and o/w types which previously often became contaminated by micro-organisms in spite of their being preserved by *p*-hydroxybenzoic acid esters in the usual concentrations.

Sorbic acid is reported to be non-toxic even in high concentrations, on oral administration⁵⁻⁷. No data seem to have been published on its use in dermatological or cosmetic products.

As mentioned, sorbic acid has been used in this laboratory for the preservation of ointments and creams. A test on 20 members of the staff showed, however, that application of these products to the face caused in one-half the number a more or less obvious erythema and slight itching, sometimes even slight oedema. The reaction appeared 5 to 15 minutes after the application and disappeared completely in 1 to 2 hours. In order to further investigate the irritative effect of sorbic acid, the following simple test was made.

0.7 g. of a saturated (0.15 per cent) solution of sorbic acid in water was absorbed by a piece of cotton (0.15 g.), about one sq. cm. in size and applied with adhesive tape on the forearms of the subject. Five different samples of sorbic acid from different manufacturers were tested. A control with water was applied at the same time. After one hour the reactions were read. All subjects showed a more or less intense reaction to all samples. Sorbic acid that had been recrystallised several times from water and chloroform induced similar reactions, from which it can be concluded that impurities are not the cause of the irritation. In three persons specially sensitive to the acid, the smallest concentration causing a positive reaction was determined as 0.01 to 0.02 per cent in a water solution and 0.025 to 0.05 per cent in cold cream (w/o).

The number of subjects in this investigation is too small to permit definite conclusions on the suitability of sorbic acid as a preservative for products for cutaneous application, but the reactions described have been so frequent that the laboratory has omitted sorbic acid from such products. A thorough dermatological investigation of sorbic acid seems to be required.

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BOOK REVIEW

TRACE ANALYSIS. Edited by J. H. Yoe and K. J. Koch. Pp. xiii + 672. Chapman & Hall, London, 1957. 96s.

Many current chemical and biochemical problems are concerned with the isolation and evaluation of small quantities of organic and inorganic materials, and a knowledge of suitably selective methods is often essential to their successful solution. The publication in this volume of a series of papers presented at a Symposium on Trace Analysis held at the New York Academy of Medicine in 1956 is therefore timely in that it provides a useful survey of such methods. It includes 24 separate papers, collected under three headings, and each dealing with an individual aspect of trace analysis, together with reports of the ensuing discussions. The first and by far the largest section, of methodology, cover such widely differing techniques as chromatography, electrophoresis, counter-current extraction, ion exchange techniques, chemical microscopy, colorimetry, fluorimetry, flame photometry, potentiometry, coulometry, polarography and voltammetry, amperometry, emission spectrochemical analysis, gamma-ray spectroscopy, mass spectrometry, X-ray spectroscopy, X-ray micrography, neutron activation analysis and microbiological techniques. This is followed by two shorter sections, Part II on instrumentation and the interaction of β -particles with matter, and Part III on sensitivity, and separation, concentration and contamination. The papers are not comprehensive, but provide a reasonable review of the use of the various techniques, and each section carries extensive references. The value of including verbatim records of the discussions is a little doubtful, and some editing of these sections might have reduced the cost of this otherwise excellent volume.

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