Improved Staphylococcus Medium No. 110: Sodium Azide Toxicity and Sources of Contaminating Bacillus Species

STAN A. SMUCKLER AND MILO D. APPLEMAN
Department of Biological Sciences, University of Southern California, Los Angeles, California

Received for publication 26 October 1964

Two questions have arisen concerning the article of Smuckler and Appleman (Appl. Microbiol. 12:355, 1964). The question of the development of toxicity in sodium azide media had been studied in our laboratory, but these data were omitted from the publication as it was not necessarily relevant to the reported results. Gerencsen and Weaver (Appl. Microbiol. 7:113, 1959) reported that sodium azide is transformed spontaneously into hydrazoic acid, which is volatile, and contaminates media stocked beside it. A fresh sodium azide stock solution was prepared and filtered through a Seitz filter just prior to the preparation of the modified medium. This technique insured the absence of hydrazoic acid in the original azide medium. Experience in our laboratory showed that after 10 to 14 days the azide medium became more toxic to both Staphylococcus and Bacillus. This might well indicate that hydrazoic acid was formed on the aging of the medium. However, there has been no indication that other media have become toxic when stored beside the azide-containing medium or the azide stock solution.

A second question has been raised by investigators who have not encountered meat pot pies in which Bacillus spp. are a predominant type of contamination, and who have been curious as to why the high numbers were present. Bacillus spp. found in meat and chicken pot pies are usually introduced from the potato. These organisms are quite heat-resistant, and in the products of some small companies become the predominant flora and completely overshadow the staphylococci on many of the selective isolation media used. When it is necessary to plate out low dilutions of frozen meat pies so that small numbers of staphylococci can be detected, sufficient amounts of organic materials may be introduced to decrease the sensitivity of the selective media and the Bacillus spp. may overgrow the staphylococci.

This investigation was supported by Public Health Service grant EF-00010-02 from the Division of Environmental Engineering and Food Protection, Bureau of State Service.