ON THE HEAT RESISTANT STRAINS OF CLOSTRIDIUM PERFRINGENS ISOLATED IN HONG KONG

Turner and Wong (1961) demonstrated that 63% of the Chinese hospital patients in Hong Kong carried heat-resistant strains of Clostridium perfringens in their intestines. Since it is generally accepted that the high recovery ratio of heat-resistant strains of this organism are only obtainable from specimens recovered in outbreaks of food poisoning, we investigated into this problem again by collecting fecal samples from Chinese people in Hong Kong for study.

The method for isolation of heat-resistant strains was the same as that of Turner and Wong (1961). All isolates are stocked in liver broth or cooked meat broth. As a result, 40 out of 74 samples of feces yielded C. perfringens strains when the stool samples were preheated at 100°C for 60 min for isolation. Thus it confirmed the finding of Turner and Wong. However, all 22 but 5 isolates selected at random from the 40 heat-resistant strains, when cultured in Nishida, Seo and Nakagawa’s spore medium (1969) and re-examined by heat selection at 100°C for 10 min, were proved to be heat-sensitive. This finding was supported by Tamai’s unpublished data. In 1967 he had recovered 30 strains of C. perfringens from Chinese at Hong Kong by preheating the feces specimens at 100°C for 60 min and later he found that only 10 strains of them were resistant to heating at 100°C for 10 min on second heating. This finding is quite different from that of Seo and Nishida (1969) who found that 31 out of 32 strains of the organism isolated from fecal samples of food poisoning cases in Japan were resistant to heating at 100°C for 10 min upon subsequent heat selection and 13 out of 15 strains isolated from preheated feces samples of normal Japanese were resistant when tested in the same way.

All 22 but 1 of the above-mentioned strains, when examined for their sporulation in Nishida et al.’s medium, were proved to produce extremely few spores. This finding is in agreement with that of Nishida et al.’s finding that the strains recovered from soil samples preheated at 100°C for 60 min yielded few spores in their medium. Although Nishida et al. stated that a majority of C. perfringens strains isolated from preheated samples fermented salicin, only 3 of these 22 strains fermented salicin. In parallel with the above-mentioned study, we isolated another 22 strains of C. perfringens from unheated stools which were demonstrated to carry C. perfringens strains resistant to heating at 100°C for 60 min. Only 1 of these 22 strains was resistant to heat selection at 100°C for 10 min on second heating. The result confirms the finding of Nakagawa and Nishida (1969).

This study suggests that although the recovery ratio of C. perfringens strains from normal feces of Chinese in Hong Kong by preheating of the stool specimens was extraordinarily high, the greater part of these strains are not heat-resistant upon second heating and that most of the C. perfringens strains in Chinese intes-
tines are as sensitive to the heating at 100°C for 10 min as those in Japanese intestines (Nakagawa et al., 1969).

REFERENCES


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