# ANAEROBIC FERMENTATION OF MANNITOL BY STAPHYLOCOCCI

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Mannitol fermentation has long been considered an important test in studying staphylococci, and yet reports on its correlation with other tests vary widely. Hallman (Proc. Soc. Exptl. Biol. Med., **36**, 789) found a 91 per cent correlation with the coagulase test on 487 strains. On the other hand, Plastridge *et al.* (Storrs Agr. Expt. Sta., Bull. 231) found that 74 per cent of their 211 coagulase-negative strains fermented mannitol. Colwell (J. Bact., **37**, 245) reported that of 28 mannitol-fermenting strains only 2 would ferment anaerobically. Unfortunately, her tests were not correlated with the coagulase test.

Study of a small collection of mannitol-fermenting staphylococci has revealed that the anaerobic fermentation of mannitol correlated 100 per cent with the coagulase test (see table).

| | NO. OF CULTURES | FINAL pH IN MANNITOL BROTH | |
|---|---|---|---|
| | | Anaerobic | Aerobic |
| Coagulase (+) | 11 | (10) 5.0–5.6<br>(1) 6.2 | 4.9–5.2 |
| Coagulase (−) | 21 | 7.0–7.2 | 5.0–5.9 |

The group of coagulase-positive cultures included 4 from clinical infections, 2 old stock cultures, and 5 from frozen foods. The coagulase-negative strains were all from frozen foods.

It would seem from this that the incorporation of mannitol in selective aerobic plating media is useful, but not perfect. In addition, it has been noted that when 7.5 per cent NaCl is included in the plating medium (Chapman: J. Bact., **50**, 201) the acid production by coagulase-positive strains is reduced, but not, in a majority of cases, that of the coagulase-negative strains. This is so pronounced that, if bromcresol purple is substituted for the phenol red indicator, the coagulase-positive strains produce very little or no yellow zone. Of the 21 coagulase-negative strains, 14 produced a pronounced yellow zone on this medium.

It is recognized that only a small collection of organisms from a limited number of sources has been used, and it is scarcely to be expected that the correlation between the coagulase test and anaerobic fermentation of mannitol will remain perfect, but the importance of anaerobiosis should be noted. This may serve to re-evaluate the importance of mannitol fermentation in studying staphylococci.