

## Lactose-Fermenting Organisms Resembling *Neisseria meningitidis*

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Of 152 isolates from a study of asymptomatic carriers of meningococci (Mitchell et al., *to be published*), 8 (5.3%) were organisms which closely resembled *Neisseria meningitidis*, but which repeatedly fermented lactose as well as glucose and maltose. Colonially indistinguishable from *N. meningitidis*, these organisms were oxidase-positive gram-negative diplococci as well. They could be grouped by slide agglutination and fluorescent-antibody (FA) staining, by use of pooled and group-specific reagents, after isolation on Thayer-Martin medium (Thayer and Martin, Public Health Rept. U.S. 79:49, 1964) and a single subculture to Chocolate Agar (CA). Six were serologically indistinguishable from group B meningococci; one was probably of "group B" but agglutinated equivocally on one of two trials with group C antiserum; one strain was ungroupable and apparently rough even on initial isolation. On repeated laboratory subculture, often as few as three passages, these organisms lost their peripheral antigens (thin "capsules") and were then ungroupable by either agglutination or FA staining. On a similar or greater number of passages, the peripheral antigens of typical group B meningococci remained intact.

A standard inoculum of one loopful (about 0.007 ml) of a 1:100 saline dilution from an 18-hr blood broth culture of each isolate was streaked to CA plates and to nutrient agar (NA) slants. The CA plates were incubated in a candle jar at 22 C for 72 hr. One set of NA slants was incubated at 25 C and another set at 37 C in a candle jar for 48 hr. A set of CA plates at 37 C served as a control for viability of the organisms. Two strains of proven *N. meningitidis* group B, and one of *Neisseria subflava*, were inoculated to both media and incubated at all temperatures as further controls.

Like *N. meningitidis*, and unlike *N. subflava*, all lactose-fermenting organisms failed to grow at 22 C. At 25 C on NA, seven of the eight strains did not multiply; one strain showed light growth at 24 hr, and heavy growth at 48 hr. Six of the eight strains, and *N. subflava*, grew at 37 C on NA; the remaining two strains and the meningococcal controls failed to grow.

Twenty-seven additional lactose-fermenting organisms of this sort have been encountered at the Diagnostic Bacteriology Laboratory of the Communicable Disease Center since 1950, with most being isolated in the past 2 years. Thus far, all have come from asymptomatic carriers, and on receipt from other laboratories have been uniformly ungroupable by agglutination. Only one strain, inhibited by 3.0 mg/100 ml of sulfadiazine, was at all resistant to sulfonamides. None of 15 strains of meningococci (13 of group B, 2 of group C) recently isolated by us from spinal fluid, and none of 137 strains from spinal fluid which were sent to the Communicable Disease Center in the past decade, was a lactose-fermenter. It is, nonetheless, theoretically possible that some of the pathogens called "meningococci" which are isolated from spinal fluid are, in fact, lactose-fermenting organisms, because fermentations are not tested routinely in most hospital diagnostic laboratories.

Whether the strains described here are "atypical meningococci" or represent a new, closely related species is uncertain at present. Attempts in our laboratory to induce lactose fermentation in typical meningococci by repeated passage through cystine-Trypticase-agar medium containing lactose thus far have been unsuccessful in a limited trial of two strains.