MICROCOCCUS EUCINETUS N.SP.

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ABSTRACT. A flagellated coccus is described which has the morphologic and physiologic characteristics of the genus Micrococcus. The organism was isolated from a marine clam but is not strictly halophilic. The characteristics are sufficiently different from those of previously described micrococci to justify a new species.

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Several kinds of flagellated cocci have been described in the literature. Perhaps the first of these is Micrococcus agilis isolated by Ali-Cohen (1889). Loeffler (1889) obtained a transplant of this organism from Ali-Cohen, stained the flagella and verified its identity as a flagellated coccus. I have not been able to obtain a motile culture of a micrococcus with the characteristics of M. agilis Ali-Cohen, nor have I been able to obtain any motile micrococcus strains from culture collections.

The description of M. agilis by Ali-Cohen is brief but adequate to differentiate it from M. eucinetus. M. agilis produced a rose-red pigment, did not grow at body temperature, and liquefied gelatin slowly. M. eucinetus produces a mustard, yellow-brown or yellow-orange pigment, grows well at 37°C, and liquefies gelatin rapidly. The pigmentation difference would seem most significant.

Three cultures of the organism were isolated from the intestine of a clam taken from the water of Noank Harbor off Long Island Sound.

Description

Morphology. From Gram stained smears the soma of the organism showed an average diameter of 1 μ . It was Gram-positive. The grouping was indefinite with groups of 1, 2 and 4 individuals, but never groups of 8. Definite chain

formation was not apparent nor were clusters such as are produced by staphylococci. Motility was quite active. The flagellated individuals showed most frequently 1 or 2 flagella, rarely more. The flagellar wavelength averaged $3\ \mu$, but the flagellar shape was often quite irregular and frequently straight. Formalin fixation did not alter the flagellar shape.

Cultural characteristics. Colonies on agar were smooth and yellow-brown or yellowish-orange colored. The pigment was water insoluble. Growth on slants was fairly heavy, smooth and colored like the colonies. In broth the growth was uniformly turbid. Oxygen relations, aerobic; temperature relations, mesophilic with good growth at 20° and 37°C ; osmotic relations, salt tolerant with good growth in sea water media and also fair growth in media without added salt; pH relations, neutrophilic.

Physiological characteristics. Using the MOF medium of Leifson (1963) acid was produced from glucose, maltose and mannitol aerobically but not anaerobically. In other words, the carbohydrate metabolism was oxidative and not fermentative. In lactose and xylose acid was not produced. The reaction in sucrose by the original 3 strains, XQ11, XQ40 and XQ58 was not the same: XQ11 acidified sucrose promptly, XQ40 after a delay of about 3 days (20°C incubation), and XQ58 did not acidify sucrose. When XQ40 was plated and a number of colonies fished, none of the resulting cultures produced acid in sucrose. Sucrose positive variants apparently were present in the original XQ40 isolate. When XQ11 was plated and colonies fished all resulting cultures produced acid in sucrose. Gelatin was liquefied quite rapidly. Nitrate was not reduced. Catalase reaction was strongly positive.

Habitat. Isolated on sea water nutrient agar from intestine of a clam from Noank Harbor off Long Island Sound. Grows without added salt and is not strictly a marine organism.

Type culture. A culture of laboratory strain XQ40 (sucrose negative strain) has been deposited in the American Type Culture Collection, Washington, D.C.

BACTERIOLOGICAL NOMENCLATURE
AND TAXONOMY

Micrococcus eucinetus n.sp.

Gram stain and Leifson flagella stain. X 2,000.

Figure 1. Gram stain of strain XQ40.

Figures 2, 3. Strains XQ11 and XQ40, respectively.

One and two flagella per individual organism were most common.

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