

# Fish and Shellfish Diseases in Culture Systems

## IX Screening of bacteria for identification

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Taxonomy is a significant aspect of study, for a microbiologist, in any application. But, the problems are greater for an aquatic microbiologist as compared to those of a medical microbiologist, because studies have been made in depth in medical microbiology.

For identifying bacteria, various systems of classification exist (Scholes and Shewan, 1964). A very detailed and useful key is provided by Buchanan and Gibbons (1974). However, problems still exist in this system of classification. It is good that the number of species has been reduced in the 8th edition of Bergey's Determinative Bacteriology. For example, where there were 16 species in the genus, *Micrococcus* in the 7th edition of Bergey's, in the 8th edition there appear only three species in the genus, *Micrococcus*. As a result, one has to fix one's isolate within this number of available species which mostly results in the repetition of the same species. In addition to this, Bergey's system of classification can be handled only by specialists.

In order to aid beginners in microbial taxonomy, a simple and rapid system is called for and this has led to the formation of the keys given in Tables 1 and 2 for screening bacteria: rods and cocci (plate 1; fig. 1 and 2).

The present keys require the following tests for categorising an organism.

- 1) Cell morphology and Gram's staining according to Hucker's modification (Bullock, 1971).
- 2) Motility in hanging drop preparations from cultures following inoculation for 6-18 hours in

peptone water or sea water peptone (1% peptone in aged and filtered sea water pH 2-7.5).

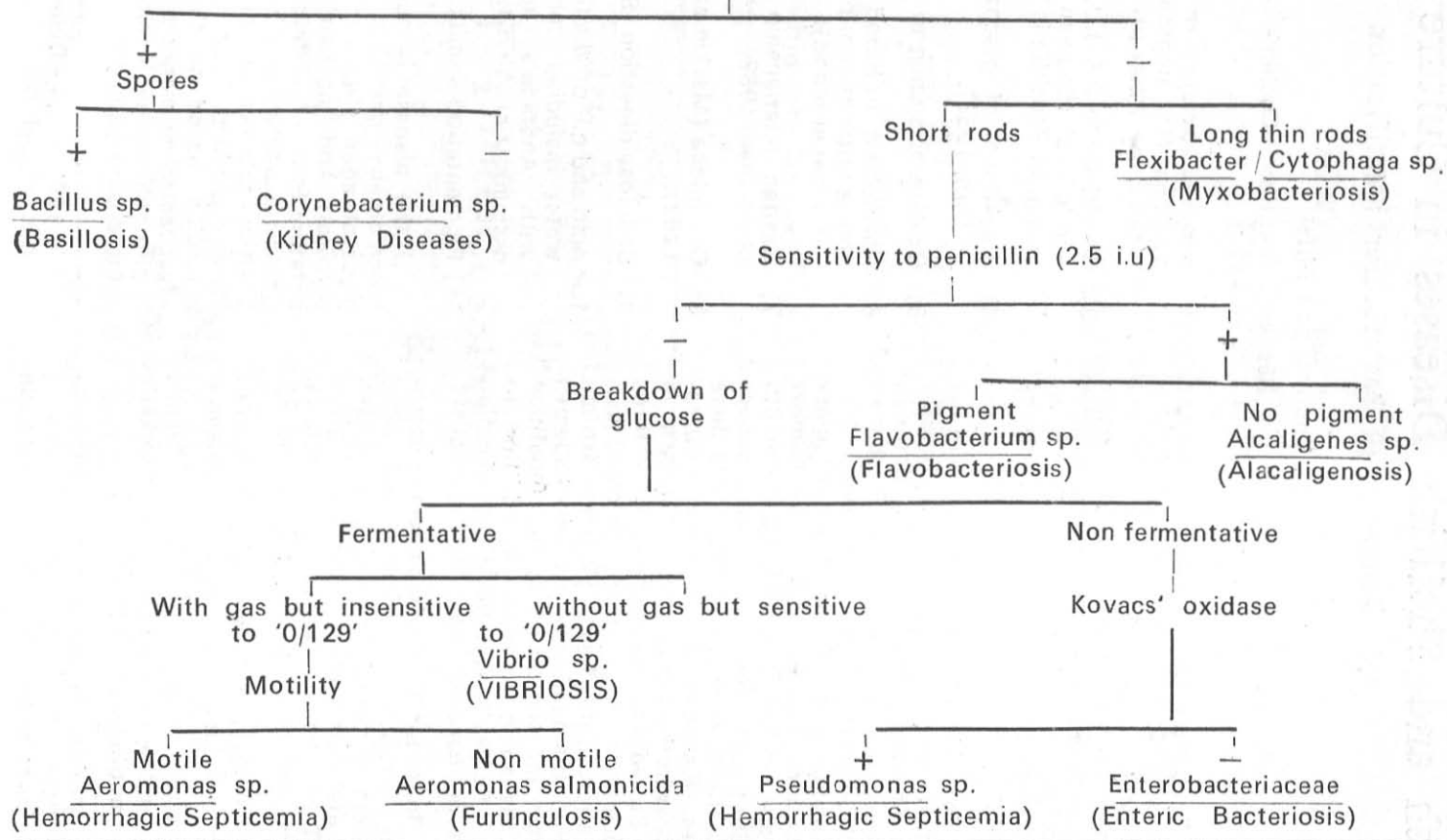
- 3) Sensitivity to 2.5 I.U. of penicillin and '0/129' (Shewan *et al.*, 1954). (1 mg. of Penicillin is 1667 I.U).
- 4) Breakdown of glucose (Hugh and Leifson, 1953).
- 5) Oxidase according to Kovacs (1965)
- 6) Haemolysis in blood agar (cooled sterile nutrient agar plus 5% sterile defibrinated blood).
- 7) Oxygen relationship (Mackie and McCartney, 1962).
- 8) Coagulase (Mackie and McCartney, 1962).
- 9) Cellulose digestion (Skerman, 1959).
- 10) Acid and gas production in peptone water including respective sugar with Andrade's indicator (Cruikshank *et al.*, 1975).
- 11) Pigmentation in milk agar.

If the disease is suspected to be tuberculosis, inoculate the sample in glycerol agar (Nutrient agar plus 1% glycerol) and incubate at room temperature for a few days upto 2 weeks. Colony characters may be noted if Gram positive, acid fast organism is observed. The organism may be tentatively classified, based on the pigment, as *Mycobacterium marinum* if the pigment is photochromogenic and *M. fortuitum* if there is no pigment.

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'0/129' = 2,4 - Diamino - 6, 7 - diisopropyl pteridine

TABLE I  
BACTERIA  
(RODS)  
GRAM'S STAINING



'0/129' = 2,4 6,7 diisopropyl pteridine

TABLE II  
BACTERIA  
+  
(GRAM COCCI)

