THE PROPOSED NEOTYPE STRAIN OF
PSEUDOMONAS ALCALIGENES MONIAS 1928¹

Request for an Opinion

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SUMMARY. The morphological and physiological characteristics of the proposed neotype strain of Pseudomonas alcaligenes Monias 1928 (American Type Culture Collection (ATCC) 14909, National Collection of Type Cultures (NCTC) 10367 (RH 1577) are presented. A photomicrograph of a stained preparation and electron micrographs illustrate the polar flagellum of the monotrichous cells. The authors request an Opinion on this proposal by the Judicial Commission of the International Committee on Bacteriological Nomenclature.

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INTRODUCTION

Monias 1928, 332 named Pseudomonas alcaligenes on the basis of a study of 10 strains. They were described as follows: "Gram-negative, straight and curved rods; motile by means of polar flagella; no indole production; milk alkaline; no fermentation of any carbohydrates." Monias noted that gelatin was not liquefied and pigment was not produced. Ikari and Hugh 1963 isolated and described 12 strains of monotrichous Pseudomonas alcaligenes (not Bacterium

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alcaligenes Mez 1898, 63) with a polar flagellum. The strains were isolated from the liver of a small pig, blood of a patient with pyrexia, swimming-pool water, urine, dejecta of a frog, turtle aquarium water, and from pond and river waters. The similarities of the 12 strains were described, and ATCC strain 14909 was suggested as the neotype strain since the cultures which Monias studied apparently are no longer available.

The purposes of this report are to describe the morphological and physiological characteristics of the proposed neotype strain of Pseudomonas alcaligenes (ATCC 14909, NCTC 10367, RH 1577) and to request an Opinion on the proposal of this strain by the Judicial Commission of the International Committee on Bacteriological Nomenclature.

MATERIALS AND METHODS

Pseudomonas alcaligenes strain RH 1577 was isolated from swimming-pool water in 1961. The strain was accessioned by ATCC in 1963, and a descendant was accessioned by NCTC in 1964. The procedures employed in the study of this strain were described by Hugh and Ryschenkow (1961) and by Hugh (1964).

RESULTS

Morphology: Gram-negative asporogenous, rod-shaped; cells straight with soma size $0.5 \times 2-3 \mu$. Motile with predominantly one polar flagellum having a mean wavelength of 1.6μ (vide Figures 1, 2, 3). Two flagella at one pole were occasionally found on some cells. Capsules were not evident on the media employed in the study.

Physiology: This strict aerobe produced a dense turbidity in neutral peptone broth in 18-24 hours at temperatures of 21 and 37°C but failed to grow at 21 and 37°C in brain heart infusion broth at pH 4.5. Smooth, glistening growth appeared on nutrient, desoxycholate, and blood agars in 24 hours at 37°C. A distinctive pigment was not produced. Water- and chloroform-soluble pigments were not detected on the media employed.

Citrate (Simmons and Christensen), catalase, indophenol oxidase and nitrate reduction to nitrite tests positive. The phenylalanine deaminase test was weakly positive after 24 hours of incubation.

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Figure 1. Pseudomonas alcaligenes ATCC 14909 showing a monotrichous cell with a polar flagellum. Leifson flagella stain, X 2,000.

Figures 2 and 3. Pseudomonas alcaligenes ATCC 14909 showing monotrichous cells each with a polar flagellum. Electron micrograph X 15,000.

An alkaline reaction was produced in unsealed tubes of OF basal medium (Difco 0688, Hugh and Leifson 1953) containing the following carbon compounds: adonitol, arabinose, cellobiose, dextrose, dulcitol, ethanol 3%, fructose, galactose, glycerol, inositol, inulin, lactose, maltose, mannose, mannitol, melezitose, melibiose, raffinose, rhamnose, d-ribose, salicin, sorbitol, sucrose, trehalose, and xylose.

The indole, methyl red, acetylmethyl carbinol, gelatin, hydrogen sulfide (Kligler after 2 days' incubation), 2-ketogluconate, lysine decarboxylase (ninhydrin), malonate, nitrate reduction to nitrogen gas, growth in potassium cyanide broth, urea (Christensen), lysine, arginine, and ornithine (Møller) tests were negative.

DISCUSSION

The abstract by Ikari and Hugh (1963) and this report serve to amend the description of Pseudomonas alcaligenes Monias 1928. cursory observations on a strain of Pseudomonas alcaligenes could result in confusion with Alcaligenes faecalis, Bordetella bronchicanis comb. nov. (synonyms Bacillus bronchicanis Ferry 1911, 404; Bordetella bronchisepticus [sic] (Ferry) Moreno-Lopez 1952, 178), Pseudomonas diminuta, or Comamonas terrigena since all are motile, asporogenous, Gram-negative, rod-shaped organisms which produce an alkaline reaction in OF dextrose medium.

Lehmann and Neumann (1927, 548) were convinced by the observations of Strecker (1917) that Bacillus faecalis alcaligenes Petruschky 1896, 187 was incorrectly described and concluded that this organism belonged to the genus Vibrio. Although Petruschky's organism is very definitely described as a peritrichous organism Lehmann and Neumann renamed it Vibrio alcaligenes. Pribram (1933, 47) renamed Vibrio alcaligenes Lehmann and Neumann as Pseudomonas alcaligenes. This name is a later homonym of Pseudomonas alcaligenes Monias 1928, 332. Pribram (1933, 58) also renamed Petruschky's organism as Salmonella alcaligenes.

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