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Validation of the Name *Alteromonas luteoviolacea*

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The name *Alteromonas luteo-violaceus* [sic] Gauthier 1976 was not included on the Approved Lists of Bacterial Names and thus has no standing in nomenclature. Therefore, the name is herein validly published, and the original description is amended. The specific epithet has been corrected to "*luteoviolacea*." The type strain of *A. luteoviolacea* is CH130 (= ATCC 33492).

A group of 16 marine, violet-pigmented bacteria was previously described on the basis of morphological, physiological, and genetic characteristics (4). The cell morphology, Gram reaction, requirement for sodium, inability to grow in the absence of oxygen and to denitrify, and the low guanine-plus-cytosine contents of their deoxyribonucleic acids indicated their inclusion in the genus *Alteromonas* Baumann et al. (1) as a new species, *Alteromonas luteo-violaceus* [sic]. However, the name was not validly published because it had not been formally announced in the *International Journal of Systematic Bacteriology*, and hence it was not included on the Approved Lists of Bacterial Names (9). The purposes of this paper, then, are to effect the valid publication of the name, to correct the specific epithet, and to amend the original description of the organism.

MATERIALS AND METHODS

Bacterial strains. The 16 strains previously examined (3) (CERBOM Collection numbers CH1, CH6, CH9, CH10, CH13, CH14, CH101, CH102, CH114, CH115, CH116, CH122, CH123, CH124, and CH130) were isolated from surface seawater in the Mediterranean Sea near Nice, France.

Cultural and biochemical methods. The methods used to determine the cultural and physiological characteristics of the strains were described previously (4–7).

Utilization of organic compounds. The utilization of 72 organic substrates as sole sources of carbon and energy (see list in Table 1) was determined by the technique of Baumann et al. (2), which included use of their BM Casamino Acids medium.

Electron microscopy. The cells were grown on marine broth (Difco) for 18 h, fixed with glutaraldehyde (10% vol/vol), and then fixed on collodion and shadowed with platinum-palladium (4:1) under vacuum in a Balzers BAF 300 aparatus. Observations and photographs were made with an electron microscope (Hitachi type HU 12) at the Service de Microscopie Electronique de l'Institut Pasteur (Lille, France).

RESULTS

Cell morphology. All strains consisted of gram-negative, nonsporeforming, nonencapsulated rods which were motile by means of a single polar flagellum (Fig. 1); filamentous forms often occurred in old cultures (over 10 days).

Cultural characteristics. All strains were strict aerobes which formed, after 4 days at 23°C, circular (3 to 5 mm in diameter), regular, convex, opaque colonies which were more or less violet and which had a pale-violet or yellowish edge of variable width. A few strains (CH10, CH122, and CH130) produced colonies with waxy surfaces. Three strains (CH101, CH102, and CH122) developed a cyanide odor (4). Other cultural and physiological characteristics of the strains are summarized in Table 1. The violet pigment was identified as violacein (4).

Sodium requirements. All strains were unable to grow in the presence of less than 0.1 M Na^+; their maximal growth occurred with 0.4 M Na^+ (4).

Antibiotic production and catalase effect. Except for strains CH101 and CH102, the strains produced a macromolecular polyanionic antibiotic, which was released into the medium whatever the composition of the medium, and one or two autotoxic brominated compounds (8). The strains (except CH101 and CH102) presented a strong catalase effect (4), as described by Sneath (10). This effect is probably due to the polyanionic antibiotic (3), which is similar to that of *A. rubra* (5), *A. citrea* (6), and *A. aurantia* (7).

Metabolism of carbohydrates. Glucose, trehalose, and maltose were oxidatively metabolized (4).

Guanine-plus-cytosine content of deoxyribonucleic acid. The guanine-plus-cytosine contents of the deoxyribonucleic acids ranged from 40.9 to 42.2 mol% (T_m), with a mean value for the 16 strains of 41.69 mol% (4).

TABLE 1. Cultural and physiological characteristics of *A. luteoviolacea*, including the type strain, CH130 (= ATCC 33492)

Character	*A. luteoviolacea*		
	16 strains	Type strain	Strains which gave negative results
Production of:			
Violacein	14[a]	+	CH13, 114
Yellow pigment	5 (1)[b]	(+)	CH6, 9, 101, 102, 114, 115, 116, 122, 123, 124
Brown diffusible pigment	11	−	CH101, 115, 116, 122, 130
Growth at:			
4°C	(2)	−	All except CH122, 124
10 to 30°C	16	+	
37°C	0	−	
Growth at pH 6	(7)	−	CH6, 10, 13, 115, 116, 122, 123, 124, 130
Growth at salinity of:			
10%	(1)	−	All except CH122
20 to 40%	16	+	
65%	(9)	−	CH1, 10, 13, 122, 123, 124, 130
Antibiotic produced:			
Macromolecular polyanion	14	+	CH101, 102
Brominated compounds	14	+	CH101, 102
Oxidase	16	+	
Cytochrome oxidase	16	+	
Peroxidase	16	+	
Catalase	0	−	
Reduction of nitrates	0	−	
Hydrolysis of:			
Starch	11 (4)	+	CH114
Cellulose	0	−	
Esculin	11	+	CH101, 102, 114, 115, 116
Gelatin	16	+	
Casein	16	+	
Indole production	0	−	
H_2S production	0	−	
Methylene blue reduction	0	−	
β-Galactosidase	0	−	
Urease	0	−	
Tryptophan deaminase	0	−	
Phenylalanine deaminase	0	−	
Arginine dihydrolase	0	−	
Glycine decarboxylase	0	−	
Asparagine decarboxylase	0	−	
Alanine decarboxylase	0	−	
Lysine decarboxylase	0	−	
Tween 80 esterase	16	+	
Tributyrate lipase	16	+	
Lecithinase	16	+	
Alkaline phosphatase	16	+	
Deoxyribonuclease	16	+	
Acid from:			
D-Glucose	(9)	−	CH101, 102, 115, 122, 123, 124, 130
D-Mannose	0	−	
D-Xylose	0	−	
Trehalose	16	+	
Fructose	0	−	
Maltose	16	+	
Lactose	0	−	
Saccharose	0	−	
Mannitol	0	−	
Glycerol	0	−	
Susceptibility to:			
Vibriostatic agent 0/129	0	−	
Polymyxin B	16	+	
Chloramphenicol	16	+	
Oleandomycin	16	+	

TABLE 1 —*Continued*

Character	*A. luteoviolacea*		
	16 strains	Type strain	Strains which gave negative results
Erythromycin	16	+	
Rifamycin	16	+	
Streptomycin	(2)	−	CH6, 9, 10, 13, 14, 101, 102, 114, 115, 116, 122, 123, 124, 130
Penicillin G	0	−	
Kanamycin	0	−	
Tetracycline	0	−	
Utilization of:			
D-Glucose	(9)	+	CH101, 102, 115, 122, 123, 124, 130
D-Mannose	0	−	
D-Xylose	0	−	
D-Galactose	0	−	
DL-Arabinose	0	−	
L-Rhamnose	0	−	
D-Fructose	0	−	
D-Ribose	0	−	
Trehalose	16	+	
Maltose	16	+	
Raffinose	0	−	
Saccharose	0	−	
Cellobiose	0	−	
Lactose	0	−	
Deoxyribose	0	−	
Melibiose	0	−	
Starch	11 (5)	+	
Glycerol	0	−	
Erythritol	0	−	
Mannitol	0	−	
Sorbitol	0	−	
meso-Inositol	0	−	
Dulcitol	0	−	
Adonitol	0	−	
Esculin	0	−	
Inulin	0	−	
Salicin	0	−	
D-Gluconate	0	−	
D-Glucosamine	16	+	
N-Acetylglucosamine	16	+	
Glucuronate	0	−	
o-Hydroxybenzoate	0	−	
m-Hydroxybenzoate	0	−	
p-Hydroxybenzoate	0	−	
Deoxycholate	0	−	
Citrate	0	−	
α-Ketoglutarate	0	−	
Succinate	0	−	
Fumarate	0	−	
DL-Malate	0	−	
Oxalate	6 (2)	+	CH1, 6, 9, 10, 11, 13, 14, 114
Pyruvate	8	+	CH1, 6, 9, 13, 114, 115, 116, 124
DL-Lactate	5	+	CH1, 6, 9, 10, 11, 13, 114, 115, 122, 123, 124
Acetate	0	−	
L-Glutamate	0	−	
Ascorbate	12	+	CH6, 114, 115, 116
Malonate	0	−	
L-Tartrate	8	+	CH1, 6, 10, 11, 13, 14, 115, 116
DL-Glycerate	0	−	
Tributyrin	0	−	
Tween 20	16	+	
Tween 80	16	+	
Cholesterol	0	−	
Lecithin	0	−	

TABLE 1 —*Continued*

Character	*A. luteoviolacea*		
	16 strains	Type strain	Strains which gave negative results
Creatine	0	−	
Urea	0	−	
DL-β-Hydroxybutyrate	0	−	
L-Proline	12	+	CH1, 6, 114, 116
L-Asparagine	14 (2)	+	
L-α-Alanine	16	+	
L-Phenylalanine	12	+	CH1, 6, 114, 115
L-Leucine	0	−	
Tryptophan	0	−	
L-Cysteine	(6)	(+)	CH6, 9, 10, 11, 13, 14, 101, 122, 123, 124
L-Lysine	6	+	CH6, 9, 10, 11, 13, 14, 101, 122, 123, 124
Glycyl-glycine	16	+	
L-Threonine	7 (9)	(+)	
L-Histidine	2 (8)	(+)	CH6, 9, 10, 101, 122, 123
L-Arginine	(4)	−	CH1, 9, 10, 13, 14, 101, 102, 114, 115, 116, 123, 130
L-Ornithine	0	−	
L-Tyrosine	6	+	CH6, 9, 10, 11, 13, 14, 101, 122, 123, 124

[a] Number of strains which gave a positive result.
[b] Numbers in parentheses are numbers of strains giving a slight reaction.

FIG. 1. Electron micrograph of strain CH130 (= ATCC 33492). Bar equals 1 μm.

DISCUSSION

The remarkable similarity of the phenotypic characteristics of the 16 strains investigated led me (4) to consider these strains as belonging to a single species of the genus *Alteromonas* Baumann et al. The name *Alteromonas luteo-violaceus* (sic) was proposed for this species (4), but it was not validly published because the name had not been announced in the *International Journal of Systematic Bacteriology*; furthermore, the type strain of the species had not been designated. Consequently, the name was not included on the Approved Lists of Bacterial Names (9). In addition, the specific epithet was incorrect because the ending did not agree with the gender of the generic name. The specific epithet is therefore here corrected to "*luteoviolacea*," and the name *Alteromonas luteoviolacea* is here validated (L. adj. *luteus* yellow; L. adj. *violaceus* violet; M.L. adj. *luteoviolaceus* yellowish violet).

The type strain of *A. luteoviolacea* is CH130. This strain has been deposited in the American Type Culture Collection, Rockville, Md., under the number ATCC 33492 and in the National Collection of Marine Bacteria, Aberdeen, Scotland, as NCMB 1893. It was isolated from surface seawater in the neritic zone near Nice, France.

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