

TAXONOMIC STUDY ON *STREPTOSPORANGIUM*
ALBIDUM NOV. SP.*¹⁾

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Taxonomic study of *Streptosporangium albidum* nov. sp. was reported.

Since the isolation of *Streptosporangium viridogriseum*¹⁾, the original sporaviridin-producing strain, a new species of sporangium-forming actinomycete, has been isolated as a producer of sporaviridin-like antibiotics. This strain, indexed MCRL-048 in our culture collection, was isolated from the soil sample collected at Mt. Tanigawa, Gumma Prefecture. Taxonomic studies revealed that strain MCRL-048 is a new species belonging to the genus *Streptosporangium*, for which the name *Streptosporangium albidum* FURUMAI *et* OKUDA nov. sp. is proposed. The present paper concerns the taxonomy of strain MCRL-048.

Morphological Characteristics

On synthetic media, strain MCRL-048 produces thin white aerial mycelium after several days, later becoming cottony or floccose and brownish white. Microscopic examination of the culture following growth on glucose nitrate agar revealed spherical sporangia borne on the top of scattered single hyphae (Plates 1 and 2)*²⁾. The diameter of sporangia ranged from 10 μ to 30 μ (25 μ average). Sporangiphores measured 30~120 μ by 0.7~1.0 μ . The sporangial wall appeared thick and elastic (Plate 3). Swelling of an intersporal substance was not observed in saline or other solutions. Sporangiospores were observed with sporangia under the phase microscope and liberated by the method adopted for *S. viridogriseum*. Sporangiospores (Plate 4) were

Plate 1. Conidia of strain MCRL-048 on glucose nitrate agar.

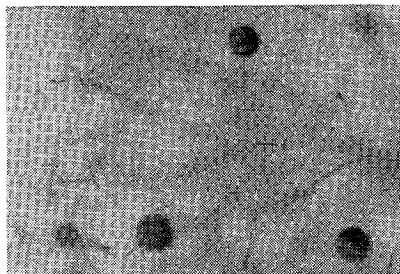


Plate 2. Electronmicrograph of sporangium on glucose nitrate agar.



*1) Actinoplanaceae Antibiotic III.

*2) On successive cultivations, the strain tends to lose the ability to form aerial mycelium.

Plate 3. Electronmicrograph of sporangial wall.

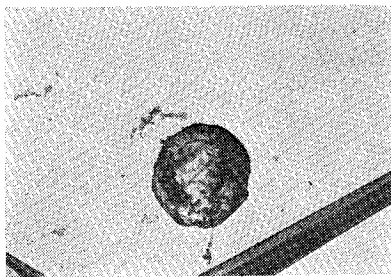
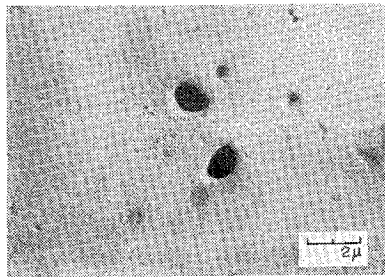


Plate 4. Electronmicrograph of sporangiospore.



elliptical, $1.0\sim 1.4$ by $1.4\sim 1.6\ \mu$ and nonmotile. Flagella were not observed on the surface of sporangiospores.

Cultural and Biological Characteristics

Cultural and biological characteristics were examined on various media, comparing colors with Iro no Hyojun (guide to color standard).²⁾ The results were summarized as follows:

1. Sucrose nitrate agar: Growth pale yellowish brown (6-18-2), reverse pale yellow orange (6-19-4). Aerial mycelium cottony, at first white, later brownish white (6-19-1). No soluble pigment. Sporangia absent.
2. Glucose nitrate agar: Growth wrinkled and colorless to pale yellowish brown (6-18-2), reverse dull yellow (7-17-4). Aerial mycelium cottony, white. No soluble pigment. Good formation of sporangia.
3. Glycerol nitrate agar: Same as glucose nitrate agar.
4. Glucose-asparagine agar: Same as glucose nitrate agar.
5. Tyrosine agar: Growth colorless and transparent, reverse yellowish brown (6-16-3). Aerial mycelium cottony, brownish white (6-19-1). No soluble pigment. A few sporangia are formed.
6. Calcium malate agar: Growth colorless to cream (7-19-3). Aerial mycelium cottony, white to brownish white (6-19-1). No soluble pigment. Good formation of sporangia. Positive solubilization of calcium malate.
7. Starch agar: Same as calcium malate agar. No hydrolysis of starch.
8. Glucose nitrate solution: Growth colorless, surface pellicle. Aerial mycelium scant, white. No soluble pigment.
9. Glucose peptone agar: Growth wrinkled, yellowish brown (6-16-3), reverse brown (5-13-4). Aerial mycelium scant, white. No soluble pigment.
10. Glucose nutrient agar: Growth pale yellow, later reddish brown (7-18-5). Aerial mycelium scant, white. No soluble pigment.
11. Nutrient agar: Growth pale yellowish brown (6-17-3). Aerial mycelium cottony, white. No soluble pigment.
12. Blood agar: Growth pale yellowish brown (6-17-3). No aerial mycelium. No soluble pigment. Strong hemolysis.
13. Potato plug: Growth yellowish brown (6-17-3). Aerial mycelium cottony, white to cream (7-19-3). Color of plug unchanged.
14. Gelatin stab: Growth yellowish brown (6-17-3). Aerial mycelium cottony, white to cream (7-19-3). No soluble pigment. Negative liquefaction of gelatin.
15. Egg medium: Growth pale yellow (7-19-3). Aerial mycelium cottony, brownish white (6-19-1). No soluble pigment.
16. Litmus milk: Growth pale yellow orange (6-19-2). Solution turns to dull red (1-

- 14-4) with acidic reaction. Positive coagulation and peptonization.
17. Other characteristics: No cellulose decomposition. Positive reduction of nitrate. Non-chromogenic.
18. Utilization of carbon sources³⁾: Fair utilization of glucose, glycerol, fructose, raffinose, rhamnose and inositol. Moderate utilization of arabinose, lactose, mannitol, mannose, sucrose and xylose. No utilization of dextrin and salicin.

Discussion

The taxonomic study presented above indicates that strain MCRL-048 should be classified in the genus *Streptosporangium*. Compared with the eight known species of *Streptosporangium* which were summarized in a previous publication⁴⁾, strain MCRL-048 resembles *S. album* NOMURA *et* OHARA⁵⁾ in the color of the aerial mycelium. However, *S. album* is different from *S. MCRL-048* in the following characteristics. Morphologically, sporangium diameter of *S. album* (6~8 μ) is far less than that of *S. MCRL-048*. Biologically, *S. album* is positive for liquefaction of gelatin, and negative for nitrate-reduction. Moreover, *S. album* requires biotin and thiamine for growth, while *S. MCRL-048* does not require vitamins. In view of the above characteristics of strain MCRL-048, it was concluded to be a new species of the genus *Streptosporangium* and named *Streptosporangium albidum* FURUMAI *et* OKUDA nov. sp. after the color of the aerial mycelium.

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