Species *Rhizobium indicum*

Etymology

[in.di'cum] **L. neut. adj.** *indicum*, of or belonging to India, where the type strain was isolated from the root nodules of pea cultivated in the trans-Himalayan region of India

Nomenclatural type

Genome sc|0003526 Ts

Reference Strain

Strain sc|0039555: JKLM 12A2 = JCM 33658 = KACC 21380 (Cat.) = MCC 3961 (Cat.)

Description

Cells are Gram-negative, aerobic, rod-shaped, motile, and 0.3–0.6 × 2–3 µm in size. Colonies are translucent, cream-white and circular convex, and grow 0.1 to 0.2 cm in diameter after three days of growth on YMA medium at 28 °C. Optimum growth observed at a pH of 7.0, a temperature of 28 °C, and a NaCl concentration of 0.25% (w/v). Strains do not grow at temperatures 4 °C and below 4 °C or at 40 °C and above 40 °C, at pH values of 4.0 or above 9.0, or at NaCl concentrations above 0.8% (w/v).
The genome consisted of 7,533,049 bp, with a circular chromosome of 5030 kb and five large circular plasmids ranging between 292 and 1125 kb.
The major fatty acids detected were C18:1 ω7c, C18:0, C14:0 3OH/C16:1 iso I, C16:0, C19:0 cyclo ω8c, C18:0 3OH, C18:1 ω7c 11-methyl, and C16:0 3OH, with a higher proportion of C18:0 in comparison to the type strains of other species. MALDI-TOF MS mean spectra profile has eight unique peaks in contrast to the type strains closely related to *Rhizobium* species.
Positive for catalase and oxidase. d-trehalose, sucrose, d-turanose, d-fructose, L-fucose, d-fructose-6-phosphate, pectin, d-galacturonic acid, d-glucuronic acid, glucuronamide, and acetic acid were assimilated on Biolog GENIII plates. The assimilation of dextrin, d-maltose, d-cellobiose, gentiobiose, stachyose, d-raffinose, α-d-lactose, d-melibiose, β-methyl-d-glucoside, d-salicin, N-acetyl-d-glucosamine, N-acetyl-β-d-mannosamine, N-acetyl-d-galactosamine, N-acetyl neuraminic acid, α-d-glucose, d-mannose, d-furctose, d-galactose, 3-methyl glucose, d-fucose, l-rhamnose, inosine, d-sorbitol, d-mannitol, d-arabitol, myo-inositol, glycerol, d-glucose-6-PO4, d-aspartic acid, d-serine, gelatin, glycyl-l-proline, l-alanine, l-arginine, l-asparatic acid, l-Glutamic acid, l-histidine, l-pyroglutamic acid, l-serine, mucic acid, quinic acid, d-saccharic acid, p-hydroxy-phenylacetic acid, methyl pyruvate, d-lactic acid methyl easter, l-lactic acid, citric acid, α-keto-glutaric acid, d-malic acid, l-malic acid, bromo-succinic acid, tween 40, γ-amino-butyric acid, α-hydroxy-butyric acid, α-hydroxy-D,L butyric acid, α-keto-butyric acid, acetoacetic acid, propionic acid and formic acid is negative. Sensitive to sodium lactate 1%, fusidic acid, d-serine, troleandomycin, rifamycin sv, minocycline, lincomycin, guanidine HCl, niaproof 4, vancomycin, tetrazolium violet, tetrazolium blue, nalidixic acid, lithium chloride, potassium tellurite, aztreonam, sodium butyrate and sodium bromate on Biolog GENIII plates.
Positive for nitrates to nitrogen conversion, aesculin hydrolysis, and β-galactosidase activity, and negative for nitrate reduction to nitrites, indole production from tryptophane, glucose acidification, arginine dihydrolase, urease, gelatine hydrolysis, and assimilation of glucose, arabinose, mannose, mannitol, N-acetyl-glucosamine, maltose, gluconate, caprate, adipate, malate, citrate and phenyl-acetate on API 20NE test strips. Positive for alkaline phosphatase, napthol phosphohydrolyase, α-glucosidase, esterase (C4), esterase lipase (C8), leucine arylamidase, acid phosphatase, valine arylamidase, cysteine arylamidase, trypsin, β-galactosidase, β-glucosidase, α-mannosidase and N-acetyl-β-glusaminidase, and negative for lipase, α-chymotrypsin, α-galactosidase, β-glucournidase and α-fucosidase on the API-Zym test strips.

Classification

Bacteria » *Pseudomonadota* » *Alphaproteobacteria* » *Hyphomicrobiales* » *Rhizobiaceae* » *Rhizobium* » *Rhizobium indicum*

References

Effective publication: Rahi et al., 2020 [1]

Registry URL

https://seqco.de/i:49630

References

1. Rahi et al. (2020). Rhizobium indicum sp. nov., isolated from root nodules of pea (Pisum sativum) cultivated in the Indian trans-Himalayas. *Systematic and Applied Microbiology*. DOI: 10.1016/j.syapm.2020.126127