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NOTE ON *NOCARDIOPSIS SYNNEMATAFORMANS* ITD-3 ISOLATED FROM INDIAN THAR DESERT

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Indian Thar desert between 24-29°N latitude and 70-76° longitude over North-Western parts of India covers an estimated area of about 0.32 million km^2 (Krishna, 1968). It is characterized with sandy to sandy loam soils having sand dunes, inter-dune plains, high temperature, wind erosion, low and sporadic rainfall and poor soil fertility (Gehlot and Singh, 2015). The average pH of soil ranges from 7.5 to 9.5 while, the amount of nitrogen, phosphorus and potassium of sandy loam soil is very poor. Indian Thar Desert is well known for their rich and unique assemblage of flora and fauna, it is an area where much of the microbial diversity and density occurs. Among the diverse groups of microbes, actinomycetes may constitute ~50% of the total microbial bacterial population in desert soils. Actinomycetes are aerobic, spore forming and gram positive bacteria that have DNA with a high GC content >55% in their DNA (Gurung, 2009). They form extensive branching substrate, aerial mycelia and widely distributed in soil (Kampfer, 212) and play an important role in decomposition of organic matter, nitrogen fixation, production of growth promoting substances, production secondary metabolites with special reference to antibiotics. (Jensen *et al.,* 2005).

Durig the exploration of Actinomycetes species from Indian Thar desert, rare species *Nocardiopsis synnemataformans* ITD-3 was isolated and characterized through morphological, biochemical physiological and molecular aspects are as follows.

Characteristics feature of *Nocardiopsis synnemataformans* ITD-3

The *Nocardiopsis synnemataformans* ITD-3 was isolated from the JNV University campus, Jodhpur, Rajasthan. The colony colour of the species was observed with white aerial mycelia on the AIA and SCA media

Fig. 1 : Colony of *Nocardiopsis synnemataformans* ITD-3 on AIA media.

and the substrate mycelium was of yellow colour. The aerial mycelium was well developed having zig-zag or spiral forms with white or slightly pimento in colour may be due to reflection of colour from the substrate mycelium. The species was Gram positive in nature and showed positive test against methyl red test, Vogue-proskauer test and Indole production. It did not produce Melanin pigment and showed negative test against nitrate reductase. *N. synnemataformans* ITD-3 hydrolysed starch, casein and urea and had positive response for catalase production and citrate utilization. The species used D-xylose, D-fructose, dextrose, sucrose, maltose and lactose as carbon source for their growth and metabolism while only trace of growth was reported on

raffinose. The optimum temperature for the growth of the species was reported to be 37°C. The GC content in the DNA of the species was found to be 60.52 per cent. The species showed 99 per cent similarity with the reference sequence KF543086 of NCBI database. The gene sequences (16S rRNA gene) of the species have been submitted to the NCBI database and GenBank accession number KJ438288 has been assigned which is available in public domain. The active slant of *Nocardiopsis synnemataformans* ITD-3 has been deposited to Microbial culture collection, National Centre for Cell Science, Pune, India for national repository and further utilization as resource microorganism in pharmaceutical industries.

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