

SUMMARY

Streptomycetes are considered as a group of microorganisms of very strategic importance. Since 1964, an intensive work has been conducted by the supervisor of this thesis on the taxonomy and biological activities of streptomycetes isolated from soils of Egypt and several new species were described. In view of the fact that Streptomyces taxonomy has recently undergone revolutionary changes, where newly suggested biochemical, chemical, genetical and numerical criteria are given more weight than the traditional morphological or physiological characters, it was thought necessary to redescribe the collection of Streptomycetes obtained from soils of Egypt. The present thesis deals with the redescription of the pigmented isolates of Streptomycetes belonging to the grey Series, i.e. producing grey coloured aerial mycelium. The present work deals with representative pigmented isolates previously described as well as some newly obtained isolates. The studied Streptomycetes were differentiated into the six known colour sections: violet, blue, green, brown, red and yellow.

The violet Section

Group one: Isolates of this group produce spiral chains of smooth surface spores, grey aerial mycelium with purple substrate mycelium, diffusible pH sensitive purple pigments, melanin positive, mesophiles, produce antibiotics active against Gram positive bacteria, but sensitive to some antibiotics, show lipolytic, keratinolytic, cellulolytic and chitinolytic activities, degrade some complex compounds. Isolates of this group were identified as Streptomyces prunigriseolus, n.sp. **Hussein and EL-Gammal, 1973.**

Group two: Isolates of this group produce compact spiral chains of smooth spores, grey aerial mycelium with violet substrate mycelium diffusible pH sensitive violet pigments, melanin positive, mesophiles, produce antibiotics active against Gram positive bacteria, but sensitive to some antibiotics, show lipolytic, keratinolytic, cellulolytic and chitinolytic activities, degrade some complex compounds. Isolates of this group were identified as Streptomyces prunicinereus, n.sp. , **Hussein and El-Gammal, 1973.**

Group three : The isolate of this group produces spiral chains of smooth surface spores, grey aerial mycelium with purple substrate mycelium, diffusible pH sensitive pigments, melanin positive, mesophile, produces antibiotics active against Gram positive bacteria but sensitive to some antibiotics, shows lipolytic, keratinolytic, cellulolytic and chitinolytic activities, degrades some complex compounds. The isolate of this group was identified as Streptomyces cinereopurpureus n.sp., **Hussein and Fahmy, 1986.**

Comparative study of the fatty acid composition of the cell wall of the three groups of the violet section revealed a high common content of the fatty acid C₇.

The blue Section

Group one. Subgroup (a) Isolates of this group produce spiral chains of smooth spores, medium grey aerial mycelium, blue substrate mycelium on starch nitrate agar, but crimson red on fish meal extract agar, pigments are pH sensitive, melanin negative, mesophiles, produces antigram positive bacteria, sensitive to some antibiotics , show lipolytic, keratinolytic, cellulolytic, pectinolytic and chitinolytic activities, and degrade some complex compounds. Isolates of this subgroup were identified as Streptomyces rubrocyaneus n.sp., **Hussein, 1964.**

Subgroup (b) The isolate of this group produces spiral chains of smooth surfaced spores, bluish grey aerial mycelium, deep blue substrate mycelium, diffusible pH sensitive blue pigment, melanin negative, mesophiles, does not produce antibiotics, sensitive to some antibiotics, shows lipolytic, keratinolytic, cellulolytic, pectinolytic, and chitinolytic activities and degrades some complex compounds. The isolate of this group was identified as Streptomyces coelicolor, **Muller, 1908**.

Group two: Subgroup (a): The isolate of this subgroup produces spiral chains of spiny spores, dark grey aerial mycelium, blue nondiffusible pH sensitive pigment, melanin negative, mesophile, produces antiyeast as well as antibacterial (Gram positive) antibiotics, sensitive to some antibiotics, shows lipolytic, keratinolytic, cellulolytic and chitinolytic activities, degrades some complex compounds. The isolate of this subgroup was identified as Streptomyces cinereocyaneus, n.sp- **Hussein and Shash, 1992**.

Subgroup (b): The isolate of this subgroup produces spiral chains of spiny spores, bluish grey aerial mycelium, diffusible blue pH sensitive pigments, melanin negative, mesophile produces antibiotics active against yeasts and Gram positive bacteria, sensitive to some antibiotics, shows lipolytic, keratinolytic, cellulolytic, pectinolytic and chitinolytic activities and degrades some complex compounds. The isolate of this group was identified as Streptomyces caerulatus, **Krassilnikov, 1965**.

Group three :The isolate of this group produces spiral chains of hairy spores, grey aerial mycelium, pH sensitive blue undiffusible pigments, melanin negative, mesophile, produces antibiotics against yeasts and bacteria (Gram positive), sensitive to some antibiotics, show lipolytic, keratinolytic, cellulolytic, pectinolytic and chitinolytic activities. Degrades some complex compounds. The isolate of this group was identified as a new species to which the name Streptomyces cyanotrichosporus,

n.sp. ,Hussein and Shash 1992.

The comparative study of the fatty acid composition of the cell wall of the groups of the blue section showed no common characteristics but on the contrary the fatty acid pattern of cell wall is a species character but not in any way a group character.

The Green Section

Group one: Isolates of this group produce spiral chains of smooth spores, greyish green aerial mycelium, pale green substrate mycelium, nondiffusible not pH sensitive green pigments, melanin negative, mesophiles, do not produce antibiotics but sensitive to some antibiotics, show lipolytic, keratinolytic, cellulolytic, pectinolytic and chitinolytic activities and degrade some complex compounds. Isolates of this group were identified as Streptomyces mutabilis, Gauze et al, 1957.

Group two: Isolates of this group produce spiral chains of hairy spores, grey mycelium, olive green pigmented substrate mycelium, diffusible not pH sensitive deep blue green pigments, mesophiles, melanin negative, produce antiGram positive bacterial antibiotics, sensitive to some antibiotics, show lipolytic, keratinolytic, cellulolytic, and chitinolytic activities and degrade some complex compounds. Isolates of this group were identified as Streptomyces cyanoviridis, Hussein et al 1980.

The comparative study of the fatty acids of the cell wall of representative isolates of species of the green section did not show any common character for species of this section. The fatty acid pattern of cell wall of these species is a species character.

The brown section

Group one: Isolates of this group produce spiral chains of smooth surface spores,

of the brown section revealed that it serves as a species character but not a section character.

mesophile, does not produce antibiotics but sensitive to some antibiotics, show lipolytic, keratinolytic, cellulolytic, pectinolytic and chitinolytic activities, degrades some complex compounds. The isolate of this group was identified as Streptomyces rutilosis, **krassilnikov, 1970.**

The yellow section

Group one :The representative isolate of this group produces spiral chains of smooth surface spores, grey aerial mycelium, yellow substrate mycelium, diffusible not pH sensitive pigments, melanin negative, mesophile, produces antibiotics active against Gram negative bacteria, sensitive to some antibiotics, shows lipolytic, keratinolytic, cellulolytic, pectinolytic and chitinolytic activities and degrades some complex compounds. This isolate was identified as Streptomyces aureofaciens, **Duggar, 1949.**

Group two: The representative isolate of this group produces spiral chains of warty spores, grey aerial mycelium with brownish yellow substrate mycelium, nondiffusible not pH sensitive pigment, melanin negative, mesophile, produces antibiotics active against Gram positive bacteria, sensitive to some antibiotics, shows lipolytic, keratinolytic, cellulolytic, pectinolytic and chitinolytic activities, degrades some complex compounds. This isolate was identified as Streptomyces griseoplamus, **Backus et al, 1957.**

Group Three: The representative isolate of this group produces spiral chains of spiny spores, grey aerial mycelium with light yellow substrate mycelium, diffusible not pH sensitive yellow pigments, melanin negative, mesophile, produces antibiotics active against Gram positive bacteria and yeasts, but sensitive to some antibiotics, shows lipolytic, keratinolytic, cellulolytic, pectinolytic and chitinolytic activities, degrades some complex compounds. This isolate was identified as Streptomyces griseoflavus,

(krainsky), Waksman and Henrici, 1948.

Group four: The isolate of this group produces spiral chains of hairy spores, grey aerial mycelium with pale yellow substrate mycelium, nondiffusible not pH sensitive pigments, melanin negative, mesophile, produces antibiotics active against Gram positive bacteria and yeast, but sensitive to some antibiotics, shows lipolytic, keratinolytic, cellulolytic, pectinolytic and chitinolytic activities, degrades some complex compounds. This isolate was identified as Streptomyces flavelous , Waksman, 1919.

The comparative study of the fatty acid composition of the cell wall of the representative isolates of species of the yellow section showed, that this character is an individual species character and can not serve as a common character for species of the yellow section .