S U M M A R Y

Most members of the genus Streptomyces produced several voluable biologically active substances such as : enzymes, vitamins, pigments, growth regulators, toxins and antibiotics. Antibiotics are very important for human life, plant, animals, poultry as therapeutic agents against different pathogens.

Therefore, this study was carried out to search for Streptomyces isolates from the Egyptian soils potent in the antibiotics production. Then studying the different factors affecting on the antibiotic production. The results of this study could be summarized as follow:

1- In this investigation 865 Streptomyces isolates were obtained from soil samples collected from different areas in Egypt namely El-Kalubia, El-Sharkia, El-Dakahlia governorates and then purified on starch nitrate agar medium.

2- Then,the screening of these isolates was carried out according to their antibiotic activity against the following test organisms:

B. subtilis; B. cereus; Kl. pneumonia; Staph. aureus; Sal.typhimurium; E. coli; Candida albicans; Sacch. cerevisiae and pseudomonas sp.

72 isolates of Streptomyces were selected which produced antibiotic substances. These isolates obviously inhibited the growth of the test organisms. Finally these strains were compared with each other in order to determine the best for

antibiotic production. Two strains namely Streptomyces sp.560 and Streptomyces sp.,720 were selected as the highest producer of the antibiotic among these strains.

3- B. cereus Kl. pneumonia and Sal. typhimurium were the most sensitive test organisms to antibiotics produced by the two Streptomyces strains namely Streptomyces spp.560 & 720. So, they were used as test organisms in the subsequent experiments.

4- In order to determine the best fermentation medium four media were investigated namely:

Wheat bran infusion medium , Rice bran infusion medium, Wheat straw infusion medium, Corn starch nitrate medium for the antibiotics production by Streptomyces spp.,560 & 720 to select the most suitable one for the antibiotics production by the Streptomyces isolates. Wheat bran infusion medium was found to be the best medium for the antibiotics prodction. So, this medium was selected to be used in the subsequent experiments.

5- Modified nutrient agar medium was selected as the medium for carring out the sensitivity test because it gave the better growth for the test organisms.

6- Two methods were tested to determine the sensitivity of the test organisms:

A- Holes method B- Disk method

There were no great difference between the results obtained by

the two methods. So, the disk method was used in the subsequent experiments because the disk method is easier to perform.

7- The optimum temperature for the antibiotic production by Streptomyces sp.,560 was 32 °c. While that for Streptomyces sp.,720 was 35 °c.

8- The optimum pH for the antibiotic production by Streptomyces sp.,560 was 7.5. While that for Strptomyces sp.,720 was 7.

9- The optimum fermentation period for the antibiotic productin by two strains was 5 days for Strptomyces sp.,560. While that for Streptomyces sp., 720 was 6 days.

10- Results showed that the most suitable concenration of agar in the medium used for testing the sensitivity of the test organisms towards the produced antibiotics was 12 gm/lit. of the medium.

11- Results also showed that the starch was the best carbon source in increasing the antibiotics production by Stretomyces sp., 560 & 720.

12- The most suitable concentration of starch for antibiotic production in the fermentation medium was 12 gm/lt. for Streptomyces sp.,560, while that for Streptomyces sp.,720 was 10 gm/lit.

13- Results also showed that the amino acid glycine was the best nitrogen source for antibiotics production by both the two Streptomyces strains.

14- The most suitable concentration of glycine for antibiotic production in the fermentation medium was 5 gm/lit. for both the two Streptomyces strains.

15- The antibiotic production at the optimum conditions was higher than any of the other treatments. This was found with both the two Streptomyces strains.

16- The results of the optimum conditions experiment showed that Streptomyces sp.,720 seemed to be better than Streptomyces sp.,560. So, the antibiotic produced by this strian was extracted.

17- The extraction process was carried out where different organic solvents were tested namely:

N-Putanol, Acetone, Hexane, Benzene, Chloroform, Ethyl acetate and mixture from chloroform & ethyl acetate. The results showed that the mixture from chloroform and ethyl acetate was the best solvent for extracting the antibiotic produced by Streptomyces sp.,720.

18- The antibiotic produced by Streptomyces sp.,720 was effective against the investigated plant pathogens:

Pseudomonas marginalis Erwinia carotovora Agro. tumifaciens.

19- The heat treatments of the metabolic solution showed that the intermittent heat treatment (80 °c) for 15 min. for 3 successive days slightly increased the effectiveness of the antibiotic, while boiling for 1 min. slightly decreased the effectiveness of the antibiotic, boiling for 5 min. or 10 min. caused drastic effect on the antibiotic.