SUMMARY

In this investigation, three hundred actinomycetes isolates were isolated from different soil samples collected from cultivated soil at Qaluobia, Egypt. Thirteen isolates were found to be the most active antifungal biosynthesis, isolate No. 68 was found to give the highest activity of antifungal agent. So, it was selected to carry a series of experiments to maximize antifungal production, comparison with antifungal effect of natural product e.g. essential oils and propolis also, with commercial drugs.

The reached results can be summarized as follows:

1- From 300 actinomycetes isolates, 13 ones were able to exhibit the antifungal activity against the tested dermatophyte fungi, but the isolate No.68 was found to be the best one of them, so it was identified to species level, as follows: ***Streptomyces kanamyceticus*** EHE-68.

2- ***Streptomyces kanamyceticus*** EHE-68 was grown on starch nitrate broth either at static or shaked conditions (180 rpm). It was found that the maximum values of antifungal activity at shaked condition.

3- The maximum antifungal activity of ***St. kanamyceticus*** EHE-68 of extracellular protein and growth rate after 10 days of incubation.

4- The experimental organism was able to tolerate a wide range of temperatures (20-50°C). The optimum temperature for maximum antifungal activity, extracellular protein and growth rate was 30°C.

5- ***Streptomyces kanamyceticus*** EHE-68 was able to grow on a pH range of 4-10 (adjusted with both 1N HCl and 1N NaOH). The

optimum pH value for antifungal activity, extracellular protein and growth rate was 8.0.

6- Among the tested carbon sources, starch prove to be the most suitable carbon source in production of the maximum values of antifungal activity followed by chitin. On the other hand, sucrose, cellulose and glucose were suppressed the antifungal activity..

7- Casein, peptone, beef extract, urea, yeast extract, asparagine, ammonium nitrate, ammonium chloride, ammonium sulphate, ammonium citrate, sodium nitrate and potassium nitrate were added in equimolecular weights to test its influence on antifungal activity, extracellular protein and growth rate. Casein, ammonium nitrate, ammonium sulphate and potassium nitrate were the best nitrogen sources enhanced antifungal activity produced by ***St. kanamyceticus*** EHE-68. On the other hand, ammonium citrate and potassium nitrate were the best nitrogen sources for production of extracellular protein.

8- Among the tested amino acids, L- valine, L- aniline, L- glycine and L- glutamic acid were able to enhance the antifungal activity produced by ***St. kanamyceticus*** EHE-68. While other amino acids were suppressed antifungal activity. These amino acids were L-phenylalanine, L-methionine and L-histidine.

9- Potassium monohydrogen phosphate, sodium dihydrogen phosphate and ammonium dihydrogen phosphate, were added in equimolecular weights equivalent to 1 gm/l of potassium monohydrogen phosphate. ***St. kanamyceticus*** EHE-68 gave the maximum values of the antifungal activity, extracellular protein and growth rate at potassium monohydrogen phosphate

10- All the tested mineral elements suppressed the values of antifungal activity and extracellular protein of ***St. kanamyceticus*** EHE-68 except nickel chloride, cobalt sulphate, mercuric chloride and sodium arsenate enhanced the production of antifungal and extracellular protein by the experimental organism.

11- Among the tested essential oils, clove oil had the strongest antifungal activity on the growth of ***T. rubrum, T.mentagrophytes*** and ***M.canis*** followed by mint oil. Clove oil had fungicidal effect on all tested dermatophyte fungi by MFC equal 31.25µl/100ml medium.

12- Propolis " bee glue" proved to have strong antifungal effect against the growth of ***T. rubrum, T.mentagrophytes*** and ***M.canis*** by MFC equal 800 mg/100ml medium, also it had strong fungistatic effect on the tested dermatophyte fungi.

13- MFCs of comparison of antifungal drugs uses as Griseofulvin, ketoconazole, nystatin and antifungal (ethanol extracted) produced by ***Streptomyces kanamyceticus*** EHE-68. The results indicated that ***T. rubrum, T.mentagrophytes*** and ***M.canis*** were completely inhibited it's growth by 1.25 µg, 0.666 µg, 107.2µl and 4750 mg/100ml (medium) of Griseofulvin, ketoconazole, nystatin and antifungal (ethanol extracted) produced by ***Streptomyces kanamyceticus*** EHE-68, respectively.