

Influence of antibiotic on the growth of *M.canis* and *H.capsulatum*

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ABSTRACT - Antibiotics are organic substance which check the the growth of fungus . During the study for the influence of antibiotic on the growth of fungi -10 gms of each antibiotics were added to 50 ml of Sabour dextrose (SD) liquid media . Later on they inoculated with fungus and incubated at 25±1°C for 15 days .After 15 days grown fungal were measured . The growth performance of *M. canis* and *Histoplasma capsulatum* on different antibiotics are as in order – 1. Actidione< chloromycetin<penicillin< streptomycin< tetracycline< control (*M. canis*) 2. Actodione< streptomycin<tetracycline< chloromycetin <control (*H. capsulatum*). During my study finally It was concluded that actidione was antibiotic the best drug which check the growth of fungal growth population . tetracycline and penicillin was found to be best growth promoter of mycelial fungus in both genera

Key words-Antibiotic ,control , mycelia,fungus

INTRODUCTION:

Antibiotics are organic substances which are responsible for influencing of mycelia fungus. Sometime they showed their worst growth and sometime they are responsible for the best growth of mycelia fungus . The present papers deals with influence of antibiotic on *Microsporium canis* and *Histoplasma capsulatum* , Though several reportings have been made on the influence of antibiotics on fungi Aytoon RS 1956 , Gaumann E, JAGGGO, Braun R Gilardi, GI, Gunderson K Robinson PM(1947,1965,1967)

Procedure:

Selected antibiotics were added in a ratio of 10 mg to 50 ml liquid medium . Later on they were inoculated with fungus and incubated at 25±1°C for 15 days. Selected fungal sps were grown on a thin layer of SDA medium in petridishes at room temperature . After incubation of period of 15 days 5mm blocks were cut and transferred using aseptic technique to 250ml . PH of the medium was adjusted to 5.8with the help of 0.1MKOH and 0.5 M KH₂PO₄ solution and incubated for 15 days at 25°C.After the incubation of 15 days mycelials were collected by filtering them through pre-weighed whatmans one to one filter paper individually and it was transferred to label butter paper envelope. It was dried in shade and incubate at temperature of 60±1°C.after 24 hours of this drying procedure the envelopes with mycelials mats were kept in a sealed desicator over fused calcium chloride for 24 hours. Finally grown fungal were measured in weight in milligram.

CALCULATION OF DATA:

The available data of mean dry weight of mycelium was calculated along with standard error .The data were further analysed stastically for ANOVA and critical difference

OBSERVATION:

Temperature 25°C Wt expressed in mg PH 5.8

Antibiotics	<i>Microsporium canis</i>	<i>Histoplasma capsulatum</i>
Actidione	178.000± 2.242	186.666±1.666
Chloromycetin	422.333± 1.452	465.000±2.887
Penicillin	466.666 ± 1.666	502.000±1.763
Streptomycetin	526.000 ± 0.816	311.000±2.081
Tetracyclin	547.666 ± 2.333	460.333±2.323
Control cd at 1%	620.000 ± 0.880	564.000±0.353

Anova table of *M. canis*

Source of variation	Sum of squares	Degree of freedom	Mean sum of squares	f- ratio
Antibiotic	263234.40	4.00	65808.60	65808.60
Error	10.00	10.00	1.00	
Total	263244.40	14.00		
Control cd at 1%	620.000 0.880			

Anova table of *H. capsulatum*

Source of variation	Sum of squares	Degree of freedom	Mean sum o squares	F- ratio
Antibiotic	212372.40	4.0	53093.10	53093.13
Error	10.0	10.00	1.00	
Total	212382.40	14.0		
Control cd at 1%	564.000 0.353			

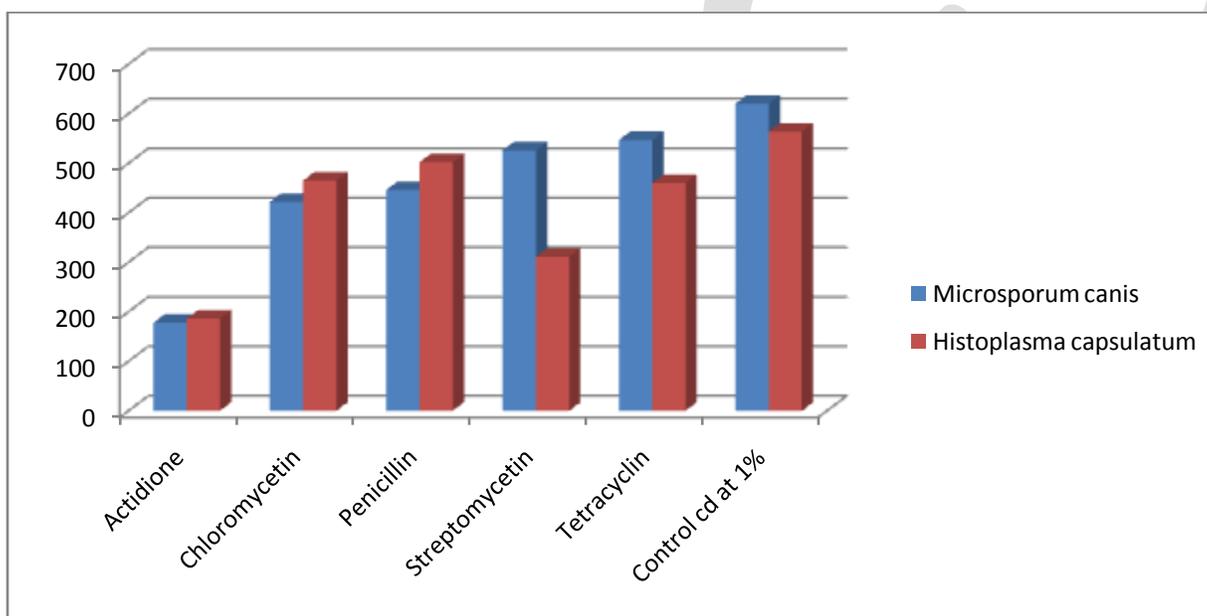


Figure 1 showing graph of influence of antibiotic in *M. canis* and *H. capsulatum*

RESULT AND DISCUSSION:

The result is highly significant for both the species. Tetracyclin control condition was found to be proved as the best growth of *M. canis* and Actidione was found to be the worst growth of *M. canis*. In the case of *H. capsulatum* Penicillin was found to be best growth performer and actidione was found to be worst growth performer.

The growth performer of these antibiotic in the case of *Microsporium canis* were as in ascending order- Actidione < Chloromycetin < Penicillin < Streptomycetin < Tetracyclin < Control.

Growth performance of *H. capsulatum*-

Actidione < Streptomycin < Tetracyclin < Chloromycetin < Penicillin < Control

Discussion:

A view of relevant literatures showed the effect, The concentrations of Griseofulvin required to inhibit growth and produce the characteristic morphological distortions were determined for dermatophytes (highly sensitive) fungal plant pathogen (moderately sensitive) filamentous non pathogenic fungi (poorly sensitive) . Addition of Griseofulvin to small inocula of the dermatophytes *Microsporum gypseum* *Trichophyton mentagrophytes* complete and permanent growth inhibition. EL Nakib, Mustafa A, WL McLellan jr, Jo Lampen (1965), In vitro susceptibility of microconidia and arthroconidia , arthroconidia of all strains appeared to be more resistant to fluconazole, Griseofulvin and Itraconazole than microconidia *Riberia O petro*, Sa O Paulo (2008) , *Paecilomyces viridis* controlled by antibiotics in vitro Barath Z Betina V Koman V (1972) ; contribution to the study of morphological changes in filamentous fungi and yeast induced by antibiotic Musik V, Serna J, Sesek V, SEMERDIZIEVA M, VODRACEK M (1974) cs Sasek V , Muslik V , (1974) ; Factors effecting the changes in Amphotericin B sensitivity of *Candida albicans* during growth Gale EF , Johnson M, Keridge D, Koh TY , (1975) ; Factors influencing the susceptibility of *Candida albicans* by the polygenic antibiotics mystemin and Amphotericin Johnson B White R , sensitivity and mycelia phase of of the *Histoplasma capsulatum* Cheung SC, Koyabashi GS, Medoff G (1976. Various authors like Kim JC et al 2001, Takashi et al 1990, Yashukava 1994, Tomada H et al 1999 contribute the role of several antibiotic on fungi.

Conclusion:

Conclusively Actidione was found to be worst growth in both fungal genera hence Actidione was the best antibiotic drug to check the growth of both fungal genera. tetracycline and penicillin was found to be best growth in mycelial fungus in both genera

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REFERENCE:

1. Aytoon R.S.C (1956) "The effect of griseofulvin on certain phytopathogenic fungi", Ann. Bot (London) V20, P297-300.
2. Barath Z, Betina V, (1972) Diphormism of *paecilomyces viridis* controlled by antibiotics in vitro *biologia* 27. 485
3. Barathova H, Betina V , Nemeč P, (1965) Morphological changes induced in fungi by antibiotics , *folia microbial.* 14, 475.
4. Cheung SC , Medoff G , Schlesinger D , Koyabashi GS (1975) Response of yeast and mycelia phase of *Histoplasma capsulatum* to amphotericin B : D antimicrobe agents *chemother.* Oct, 8(4) : 498-503
6. Gale EF, Johnson AM, Keridge D, Koh TY, (1975) factors effecting the changes in amphotericin B Sensitivity of *Candida albicans* during growth *J Gen. microbial.* 87, 20-36.
7. Gauman E, Jagg O, Braun R, 1947 antibiotika als pflanzliche plasmagifte , *Experientia* 3 , 70 .
8. Gunderson K, Wadstein T, (1962) Morphological changes and resistance induced in *Saccharomyces pastorianus* by the antibiotic cyclohexamide , *J Gen Microbiol.* 28. 325.
9. Johnson B, White R, J Williamson GM (1978) factors influencing the susceptibility of *C. albicans* the polygenic antibiotic mystemin and amphotericin B , *J gen microbial* 104, 325-337
10. Kim, J.-C., Choi, G.J., Park, J.-H., Kim, H.T. and Cho, K.Y (2001) Activity against plant pathogenic fungi of phomalactone isolated from *Nigrospora sphaerica*. *Pest Manag. Sci.* 57, 554–559.

11. Kim, J.-C., Choi, G.J., Lee, S.-W., Kim, J.-S., Chung, K.Y. and Cho, K.Y. (2004) Screening for antifungal extracts against various plant pathogenic fungi and control of powdery mildew with extracts of *Achyranthes japonica* and *Rumex crispus*. *Pest Manag. Sci.* 60, 803–808.
12. Musilek V, Cerna j, Sasek V, Semerdzieva M , Vondracek M, (1969) antifungal antibiotic of the Basidiomycete, *folia microbial*14, 377
13. Shemyakin MM, 1965 Chemistry of dipeptide antibiotics ,antimicrobial agents and chemotherapyp 962.
14. Sugwarwa S 1967,effect of azalomycin F on candida albicans *J. Antibiot, ser .A* 20 , 93 .
15. Takahashi, M., Koyama, K. and Natori, S. (1990) Four new azaphilones from *Chaetomium globosum* var. *flavo-viridae*. *Chem. Pharm. Bull.* 38, 625–628.
16. Tomoda, H., Matsushima, C., Tabata, N., Namatame, I., Tanaka, H., Bamberger, M.J., Arai, H., Fukazawa, M., Inoue, K. and Omura, S. (1999) Structure-specific inhibition of cholesteryl ester transfer protein by azaphilones. *J. Antibiotic.* 52, 160–170
17. Yasukawa, K., Takahashi, M., Natori, S., Kawai, K., Yamazaki, M., Takeuchi, M. and Takido, M. (1994) Azaphilones inhibit tumor promotion by 12-O-tetradecanoylphorbol-13-acetate in two-stage carcinogenesis in mice. *Oncology* 51, 108–112.