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CILIOSTATIC ACTIVITY IN DAY OLD CHICKS INDICATES MICROSCOPIC FUNGI TOXICITY *IN VITRO**

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Movement of respiratory tract cilia represents one of the most important lung clearance mechanisms of human body against environmental pollution. Since many different bacteria and filamentous fungi or their toxic metabolites have been detected in the working and domestic environment, a comparison of their relative ciliostatic activity *in vitro* is of great interest [1, 3, 4].

The activity of the following groups of compounds was studied using chick tracheal cultures for bioassay of mycotoxins as described by Nair *et al.* [2]:

a) 14 standards of mycotoxins (aflatoxin B1, B2, G1, G2, M1, diacetoxyscirpenol, deoxynivalenol, fumonisin, ochratoxin A, patulin, rubratoxin B, sterigmatocystin, T-2 toxin and zearalenon by Sigma Co.);

b) heat-stable (100°C/10 min) chloroform extractable metabolites from the liquid medium of 63 fungal strains;

c) chloroform-extractable metabolites from the liquid medium of other 72 fungal strains;

d) chloroform-extractable metabolites from biomass of 185 fungal strains.

All micromycetes were isolated from cotton and flax samples. Their effect was studied by microscopic observation (250 times magnification) of the movement of day old chick tracheal cilia *in vitro* after 0, 24, 48, 72 h incubation in E-MEM medium at 37°C and 5% CO_2.

Sterigmatocystin and diacetoxyscirpenol were the most ciliostatic active in our experiment - ciliostatic effect occurred after 48 h if the amount in medium was 0.03 mg/l. Aflatoxin G2, rubratoxin B and fumonisin stopped the movement of cilia after 72 h only when their amount in the medium was 20 mg/l.

Ten (15%) of 63 investigated fungal strains, especially those of the *Aspergillus niger* group, produced heat-resistant ciliostatic metabolites: 5%, 7%, 3% of the strains stopped the movement of cilia after 24, 48, 72 h, respectively.

Thirty (42%) of 72 investigated strains produced chloroform-extractable ciliostatic metabolites: 14%, 12%, 16% of the strains stopped the movement of cilia after 24, 48, 72 h, respectively. The chloroform-extractable ciliostatic metabolites were particularly characteristic of *Fusarium* spp.

Biomass extracts of 54 (29%) of 185 investigated strains, especially *Penicillium* spp., had ciliostatic activity *in vitro*: 16 (9%), 6 (3%), and 32 (17%) of the strains stopped the movement of cilia after 24, 48, 72 h, respectively.

The reduced ciliary movement due to fungi and their metabolites observed here implies that their presence in the living and working environment may be the first step in the development of human chronic respiratory diseases. However, further studies along these lines are needed.

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