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NOTES ON THE PENETRATION MECHANISM OF OVICIDAL FUNGI ATTACKING ASCARID EGGS

Some fungal species are known of destroying ascarid eggs in the soil (LÝSEK H., Nature (Lond.) 199, 925, 1963, Acta Univ. Olomouc, Faculty of Medicine 40: 83—90, 1966 and others). These fungi can penetrate the intact eggshells and attack the egg. Results of studies available on this subject indicate that the enzymatic activity and the mechanical effect of the fibres of the mycelium of the attacking fungi are participating in this process. Most nematode eggs, the ascarid eggs included, are covered with three shell layers. The outer layer is formed by proteins, the middle layer by a chitin-proteinaceous complex and the innermost layer by lipids (KREUZER L., Z. vergl. Physiol. 36: 21—26, 1963; LEŠŤAN P., Biochémia chitínu a jeho výskyt u helmintov. Helmint. ústav SAV, Košice, 1968). In addition to mechanical activities the penetration of the fungus may depend on two enzymatic systems, i.e. on proteases breaking down proteins and on the chitinase breaking down chitins or at least one of them.

In our experiments we observed the highly ovicidal effect of the fungus *Diheterospora chlamydosporia* (Barron et Onion). In an attempt of obtaining information on the penetration mechanism and mainly on the presence of the enzymatic component, we tried to make an analysis of the presence of chitinases and proteases in the ovicidal fungus under consideration.

We homogenized a 7 day-old culture of the fungus grown on Sabouraud's glucose agar at 25 °C and prepared from it an extract (LEŠŤAN, in press). This was left to act for 24 hrs on purified chitin. After this period we determined in the extract with a method described by MORGAN and ELSON (Biochem. J. 28: 988—995, 1934) the product of the lysis of chitin N-acetylglucosamine. The effect of the proteases was detected with the ninhidrine reaction of products after the action of the solution (the fungal extract) on the denaturated egg-white (for methods applied see: Methoden der enzymatischen Analyse. Verlag Chemie, Weinheim 1963).

The results of our analysis revealed only proteases but no chitinase-enzymatic system in the ovicidal fungus *Diheterospora chlamydosporia*. We believe that exopeptidases cooperate in the passage of the mycelium of this fungus through the eggshells of ascarid eggs, while the chitin of the thick middle layer is not attacked by enzymes. In addition to the mechanical effect of the penetrating fungal fibre there seems to occur only the breaking down of proteinic components in the eggshells. Our results, however, do not exclude the possibility of different penetration mechanisms in other species of ovicidal fungi.

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