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EFFECT OF "BIOSEPT 33 SL" ON THE GROWTH OF *PHOMOPSIS SOJAE* LEHMAN IN *IN VITRO* CONDITIONS

Elżbieta Patkowska

Abstract. The present studies determined the effect of preparation "Biosept 33 SL" in inhibiting the linear growth of five isolates of Phomopsis sojae in in vitro conditions. The experiment was conducted on PDA medium using the method of "the medium poisoning". The examined preparation was used at the concentrations of 165, 330 and 660 μg grapefruit extract · cm^{-3}. The pathogen's mycelium growing under the grapefruit extract was pale white, and the mycelium hyphae formed a fairly loose structure as distinct from the more compact mycelium of control colonies. Strong degeneration of mycelium hyphae was visible in microscopic preparations.

Key words: *Phomopsis sojae*, "Biosept 33 SL", *in vitro* conditions

Department of Phytopathology and Mycology, University of Life Science in Lublin, ul. Leszczyńskiego 7, 20-069 Lublin; elzbieta.patkowska@up.lublin.pl

Fungi *Phomopsis* spp. infect a lot of cultivated plants, including those from the family of Fabaceae. One of the most dangerous pathogens of soybean is *Phomopsis sojae* Lehman. It can infect all aboveground parts of this plant throughout its period of vegetation, at the same time it causing no clear disease symptoms (Pedersen & Grau 2010). One of the popular methods of protecting soybean from this pathogen is the application of biotechnical preparations based on natural substances of plant origin. In recent years much attention has been devoted to the possibility of using preparation "Biosept 33 SL" to reduce the growth and development of pathogenic fungi, both in laboratory and field conditions.

The present studies determined the effect of preparation "Biosept 33 SL" (33% grapefruit extract) in inhibiting the linear growth of five isolates of *P. sojae* in *in vitro* conditions. The experiment was conducted on PDA medium using the method of "the medium poisoning" described by Pięta *et al.* (2004). The examined preparation was used at the concentrations of 165, 330 and 660 μg grapefruit extract · cm^{-3}. The controls were the colonies of the studied fungi isolates growing on Petri dishes with the medium without an addition of the tested preparation. After 4 and 8 days the linear growth of particular isolates of *P. sojae* was established. Besides, the appearance of the fungus and its structure was observed.

The smallest diameter of 4-day-old colonies was found for isolate 'Sn 54' at all tested concentrations of preparation "Biosept 33 SL", whereas the greatest inhibition of the growth of this isolate's colonies was found on the medium containing 660 μg grapefruit extract · cm^{-3}. After four and eight days of the culture, it was, respectively, 69.25% and 74.36%. In the other isolates growing on the medium containing 165 μg, 330 μg and 660 μg grapefruit extract · cm^{-3}, after four days of culture the colony diameter was bigger than the diameter of the colony of isolate 'Sn 54' but smaller than the diameter of control colonies.

The biggest diameter of 4-day-old colonies was observed for isolate 'Sn 204' growing on the medium containing 165 μg grapefruit extract · cm^{-3}. It was 39 mm but it was insignificantly smaller than the diameter of the control colony. The biggest diameter of 8-day-old colonies was observed for isolates 'Sn 204' and 'L 32' growing on the medium containing 165 μg grapefruit extract · cm^{-3}. The mean inhibition of growth of 4- and 8-day-

old colonies of the studied isolates of *P. sojae* growing on the medium containing 660 μg grapefruit extract · cm^{-3} was higher than the mean inhibition of colony growth with the other values of concentrations. The pathogen's mycelium growing under the influence of grapefruit extract was pale white, and the mycelium hyphae formed a fairly loose structure as distinct from the more compact mycelium of control colonies. Strong degeneration of mycelium hyphae was visible in microscopic preparations.

The present studies confirmed the ability of preparation "Biosept 33 SL" to directly inhibit the growth of *P. sojae* and to cause macro- and microscopic changes in the mycelium of this pathogen. This is similar to the results of studies by other authors on different species of pathogenic fungi (ORLIKOWSKI & SKRZYPCZAK 2003; KUĆMIERZ *et al.* 2010). The present studies found out intraspecific diversity of *P. sojae*, which was reflected in morphological variability and differentiated reactions of some fungi isolates to the effect of "Biosept 33 SL".

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