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EFFECT OF ALUMINIUM FOSETYL ON THE CULTURE  
OF *MACROPHOMINA PHASEOLINA* (TASSI) GOID

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*Macrophomina phaseolina* (Tassi) Goid is an Ascomycota representative that causes a charcoal rot on the diverse variety of host plants, lots of which are significant crops for Ukraine such as sugar beet (*Beta vulgaris* L.), sunflower (*Helianthus annuus* L.), corn (*Zea mays* L.), etc. *M. phaseolina* affects fibrovascular system of roots and basal internodes of the host causing a progressive wilting, premature death and loss of a yield as a result. The pathogen infects host plant during the first stages of its growth, but symptoms of the disease appear only after a flowering phase that creates complexity in identification and cure of disease. During vegetation, pathogen forms microsclerotia (rest structures) in the stems of hosts, which helps it to overwinter in the soil or crop residues. The longtime symptomless pathogen development and soil type of plant infection (via roots) create complexity for its effective fungicide treatment.

Aluminium Fosetyl (Fosetyl-Al) is a compound of commercial systemic fungicide Aliette® by Bayer that is used to control diseases caused by pseudofungi (*Peronospora*, *Phytophthora*, etc.). This fungicide is capable of going down in the phloem and therefore may affect the fibrovascular pathogens. Fosetyl is a molecule that causes ‘host plant defense induction’ (FRAC Code List, 2020), and Al-ions can be unspecific inhibitors of different pathogens. Therefore the object of our research was to determine does Fosetyl-Al affects *M. phaseolina* cultures (using the food-poisoning method *in vitro*).

To determine the effect of the substance on the pathogen, different concentrations of Fosetyl-Al were added into the nutritional medium. Concentrations were chosen following a principle: recommended concentration, 2× dilution, 5× dilution and control without adding the substance. The effect was determined by measuring of fungus culture radial growth rate and comparing growth indexes of samples with treatment and without treatment. Cultures in the Petri dishes with the CYA nutrient medium were incubated at 26°C. The measurements were carried out on the 2nd, 3rd and 5th day after introducing the inoculum into nutrient media.

After measurements the following results were received:

Concentration	Colony diameter on 2nd day (mm)	Colony diameter on 3rd day (mm)	Colony diameter on 5th day (mm)	Radial growth rate (mm/hour)
control (0 g/l)	43,1	82,8	90	0,99
recommended (1,2 g/l)	0	0	0	0
×2 dilution(0,6 g/l)	38,5	64,3	90	0,76
×5 dilution (0,24 g/l)	54,6	79,8	90	0,96

As a result, only concentrated solution has a fungicide effect on *M. phaseolina* cultures, whereas dilutions into 2 and 5 times don't show efficacy. It was registered that 5× dilution even has a stimulating effect on *M. phaseolina* on the first days of growth. Because all basipetal preparations become more diluted in the phloem of the host plant, we suppose that Al-ions of Aliette® cannot be effective in charcoal rot controlling. The indirect effect of the preparation through the resistance of the fungicide-treated plant needs to be investigated separately.

*The work was supervised by O.Yu. Akulov, Associate professor of V.N. Karazin National University of Kharkiv (Department of Mycology and Plant Resistance)*