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## THE EFFECT OF 24-EPICASTASTERONE AND ITS CONJUGATES WITH ACIDS ON THE PHYSIOLOGICAL AND BIOCHEMICAL PARAMETERS OF *TRIFOLIUM PRATENSE* L.

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Brassinosteroids play a significant role in the plant life cycle: from seed germination to natural death. Earlier studies of brassinosteroids describe their effect on increasing the growth, yield and biological value of plants, on the functional state of the photosynthetic apparatus and the amount of pigments, as well as their involvement in the regulation of the formation of plant protective systems<sup>1-4</sup>. Currently, the research of biological activity of brassinosteroids conjugates is of great interest. To study the influence of 24-epicastasterone (EC) and its conjugates on the physiological and biochemical parameters of the meadow clover (*Trifolium Pratense* L.) in the conditions of a vegetative laboratory experiment there were used the most effective concentrations of the substances which in the preliminary laboratory experiment had the greatest effect on the growth of roots and shoots of clover: EC  $10^{-10}$  M and  $10^{-8}$  M, S23  $10^{-10}$  M (2-monosalicylate of 24-epicastasterone) and S31  $10^{-8}$  M (tetraindolyl acetate of 24-epicastasterone).

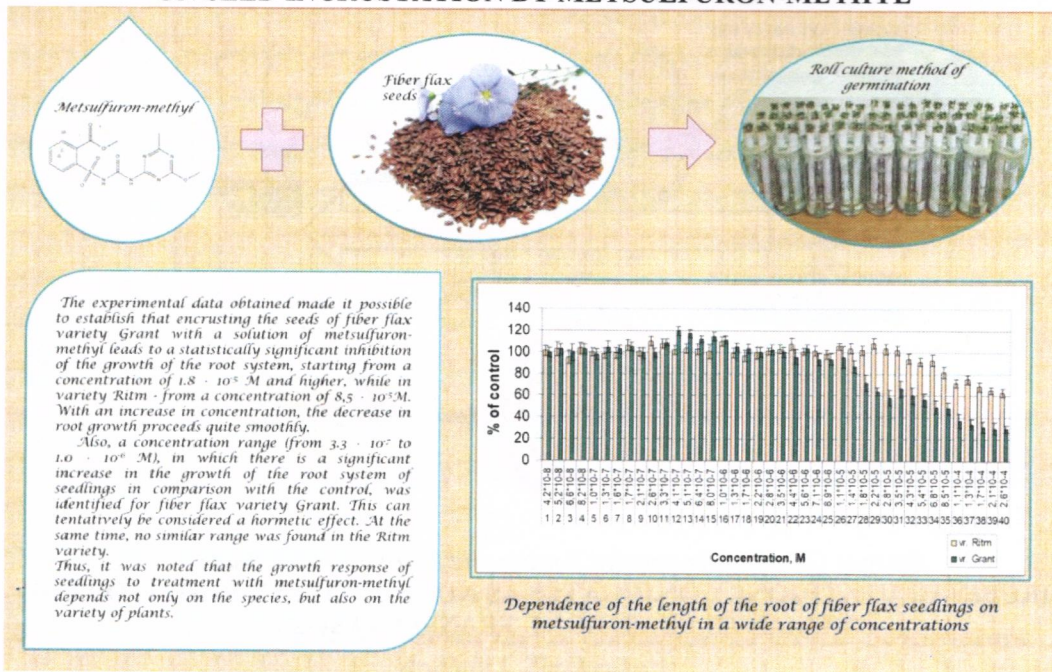
The effects of EC and its conjugates on the content of the main photosynthetic pigments and protein showed a significant change in parameters depending on the methods of application of the substances. For the pre-sowing processing of clover seeds, negative values of the pigments relative to the control were recorded for all the substances and concentrations. During foliar processing, an increase in the content of chlorophyll *a*, *b* and carotenoids is observed when using EC and its conjugates with acids (the exception is chlorophyll *a* after processing with S23  $10^{-10}$  M where slight decrease is observed compared to the control). The maximum increase of the pigments is observed after using the foliar processing of plants with the conjugate S31  $10^{-8}$  M. Thus, the content of chlorophyll *a*, *b* and carotenoids is 16.5, 18.5 and 17.2% higher than the control. There is an increase in protein content during pre-sowing processing with S23  $10^{-10}$  M and S31  $10^{-8}$  M (8.0 and 6.7%, respectively), as well as during foliar processing with S23  $10^{-10}$  M (12.6%).

Among the tested substances and concentrations for clover tetraindolyl acetate of 24-epicastasterone at concentration  $10^{-8}$  M and 24-epicastasterone at concentrations of  $10^{-10}$  and  $10^{-8}$  M have the maximum effect on the content of photosynthetic pigments after using foliar processing while the accumulation of proteins is observed under exposure to 2-monosalicylate of 24-epicastasterone  $10^{-10}$  M despite the processing method.

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**Karina Kem, Nikolai Laman, Vladimir Khripach**  
**THE GROWTH RESPONSE OF THE ROOT SYSTEM OF FIBER FLAX SEEDLINGS ON SEED INCRUSTATION BY METSULFURON-METHYL**



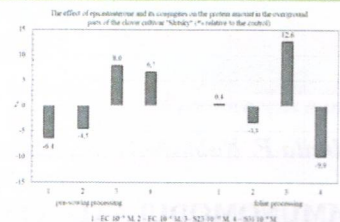
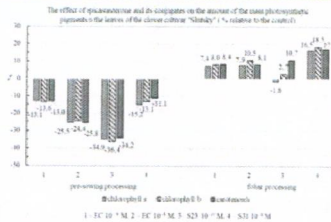
The experimental data obtained made it possible to establish that encrusting the seeds of fiber flax variety Grant with a solution of metsulfuron-methyl leads to a statistically significant inhibition of the growth of the root system, starting from a concentration of  $1.8 \cdot 10^{-5}$  M and higher, while in variety Rtm - from a concentration of  $8.5 \cdot 10^{-5}$  M. With an increase in concentration, the decrease in root growth proceeds quite smoothly.

Also, a concentration range (from  $3.3 \cdot 10^{-7}$  to  $1.0 \cdot 10^{-6}$  M), in which there is a significant increase in the growth of the root system of seedlings in comparison with the control, was identified for fiber flax variety Grant. This can tentatively be considered a hormetic effect. At the same time, no similar range was found in the Rtm variety.

Thus, it was noted that the growth response of seedlings to treatment with metsulfuron-methyl depends not only on the species, but also on the variety of plants.

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The effects of 24-epicastasterone (EC) and its conjugates with acids (the most effective concentrations on morphometric parameters) on the content of the main photosynthetic pigments and protein in the aboveground part of meadow clover in the conditions of vegetative laboratory experiment were investigated. The maximum increase of the pigments is observed after using the foliar processing of plants with the conjugate S31  $10^{-8}$  M. Thus, the content of chlorophyll *a*, *b* and carotenoids is 16.5, 18.5 and 17.2% higher than the control. There is an increase in protein content during pre-sowing processing with S23  $10^{10}$  M and S31  $10^{-8}$  M (8.0 and 6.7%, respectively), as well as during foliar processing with S23  $10^{10}$  M (12.6%).



Among the tested substances and concentrations for clover tetraundolyl acetate 24-epicastasterone at concentration  $10^{-8}$  M and 24-epicastasterone at concentrations of  $10^{10}$  and  $10^{-8}$  M have the maximum effect on the content of photosynthetic pigments after using foliar processing while the accumulation of proteins is observed under exposure to 2-monosalicylate 24-epicastasterone  $10^{10}$  M despite the processing method.