EFFECT OF GIBBERELLIC ACID (GA_3) ON MORPHOLOGY OF TWO CULTIVARS OF STRAWBERRY (*Fragaria vesca L.)*

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Introduction. The strawberry (Fragaria vesca L.) is cultivated in different parts of the world and plays an important economic role (1). Nevertheless, in the last three years, production in Mexico has shown a downward tendency. The plant responds to thermoperiod and photoperiod, with seasons which are not ideal for an optimal vegetative, flowering and fructification activity. Gibberellic acid (GA_3) is a phytohormone that carries out a primary action capable of initiating a series of molecular events (2).
The objective of this work was to determine the effect of GA_3 on morphology strawberry seeds and plantules.

Methods. In the production of GA_3, was used Gibberella fujikuroi fungus in a stirred tank bioreactor (Applikon 5 l), whit production under optimum (3). During fermentation (216 h), we determined the concentration of GA_3 in HPLC and UV-Vis. In the liquid-liquid extraction ethyl acetate was used (Mixxor equipment). Purification was by absorption column. Seed varieties were "Camino Real" and "Nitke". A seed level, factors were temperature, strawberry variety, GA_3 commercial and noncommercial, concentration and frequency of application. Were dipped seedling roots and leaves were sprayed at various concentrations and types of GA_3. The package was "STATISTICA" and "JMP8" for the extraction, purification and application of GA_3 respectively.

Results. A maximum production of GA_3 of 3.4g/L was obtained. Optimal conditions of extraction and purification were: C/S, 1:5; No.extractions, 3; t, 10min; pH, 2; T, 25°C; obtaining 1.7g/L (Fig.1). A new correlation was obtained for the concentration of GA3 between UV-Vis and HPLC methods. The application of GA_3 to the “Camino Real” and “Nitke” varieties of strawberries showed no significant differences. The most influential effect was the temperature in the seed; in 10 days the lethargy was broken (Fig.2). The optimum was T, 30°C; Frequency, 10 days; Concentration, 200µg/ml, obtaining a high resistance to drought. At the root level, the optimum was submersion of the root in 0.1µg/ml for 10 min of GA_3 obtained in fermentation. In foliar application, the best was the addition of 30µg/ml of GA_3 noncommercial.

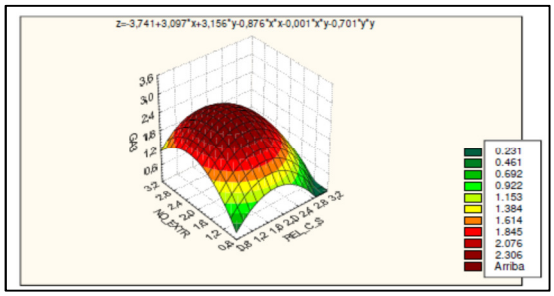

Fig.1 Effect of pH vs number of extraction for the recovery of GA_3.

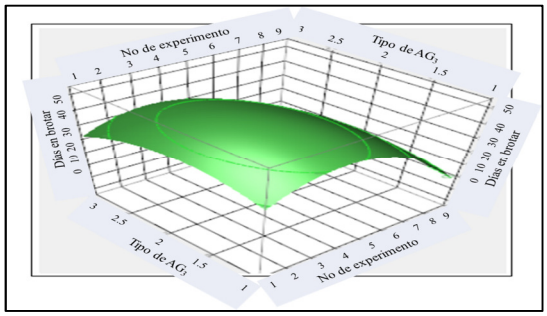

Fig.2 Response surface plot. Breaking dormancy. First outbreaks.

Conclusions. It was possible to optimize the extraction and purification of GA_3, 90% reduction in average germination time and improvement in the morphology characteristics of strawberry plantules.

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