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VITAMINES ROLES IN CULTIVARS- DIFFERENTAITORS FOR POTATO WART MICROPROPOGATION

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Summary. The researches results for vitamin complex impact on morphometric indicators on potato plants in culture *in vitro* proposed in the paper. The vitamin complex in concentration 2,0 and 2,5 ml/l add to Murashige- Skoog medium was the most effective for test tube plant morphogenesis cultivar Chervona ruta. There were determined the internodes increase; roots quantity, plants height, plants length respectfully:5,6 and 5,9 pcs, 7,0 and 7,3 pcs, 80,2 and 92,8 mm, 82,7 and 89,6 mm.

Keywords: *Potato wart, cultivar-differentiators, plants in vitro, meristem culture, nutrient mediums, vitamins.*

Introduction. Potato wart is a dangerous limit spread disease (list A-2). It is a quarantine disease. It determines in 38 countries throughout the world. Potato wart causative agent *Synchytrium endobioticum* (Schilb.) Perc. is intercellular parasite. It defeats all plant-host parts, except roots. [1–3]. They may keep viability more than 40 years in rest state. So it is necessary to grow only high resistant potato varieties to *S. endobioticum* in wart sources. It causes soil cleaning from pathogen. The yield losses may reach 50–100% during the growing susceptible varieties in sources *S. endobioticum* [3,5,6]

There are more than 40 pathotypes of *S. Endobioticum* recorded in the world at the present time. [3].The potato Ukrainian breeding test-assortment selected for it's identification. It allowed to identify present causative agent pathotypes. There is a great need in biotechnological elements of microclonal propagation for receiving necessary quantity high quality, viral-free outlet

material differentiating cultivars, So it is necessary conduct search for the new physiologically active matters.

Numerous studies [7-13] determined vitamins, especially water soluble important role for plant development *in vitro*. Water soluble vitamins vitamins B1(thiamin), B6 (pyridoxine), C (ascorbic acid) obligatory adds to group of water soluble vitamins. Vitamin B1 (Thiamin) is a crystalline substance. It is a well- dissolved solution in water. It resists against light, oxygen. It resists heating in acidic environment. Thiamin in ferments' content actively impacts on metabolism. It participates part in protein exchange, fats and carbohydrates. It recommends for many mediums It works in the form of pyrophosphate as a cofactor of citric acid Krebs cycle. It adds in the medium increases plant growth and plant differentiation. Thiamine stimulates plants root system development in nutrient medium. It is able to absorb more nutrient medium. Vitamin B6 (pyridoxine) serves as a cofactor in many metabolism reactions. It keeps potassium and sodium in organism. It is a necessary matter for full protein carbohydtates and fats exchange in organism. Ascorbic acid in plant organism participates growth process, vegetative differentiation, water exchange, enzymatic activity regulation.

The present vitamin complex favors the internodes number increase on potato regenerated plants in nutrient medium.

Some scientists showed the direct dependence upon between vitamin complex concentration in their works in nutrient medium and height of potato plant on this medium. [14-16].

Purpose was to determine vitamins role on potato wart cultivar – differentaiators,

Materials and methods. The work conducted in laboratory for agricultural crops biotechnology Ukrainian science-research plant quarantine station Institute of Plant Protection during 2020-2021. There are 9 potato wart cultivators – differentiators in it. The cultivar Chervona ruta zoned in western region of Ukraine. It used in our studies. The graft with auxillary as explants used for vitamins impact study The concentrated matters of macro, micro salts, vitamins and phytohormones – different modification Murashige- Skoog(MS) used for preparing necessary medium.

The different concentrations: 0; 1,0; 1,5; 2,0; 2,5 ml used for vitamin optimal selection choice in nutrient matter. The vitamins complex solution 1 ml

added to nutrient medium MS- 1,0. Other nutrient matters received in the same way.

Plants-regenerants cultivated in the following terms: photoperiod 16/8 hours, lighting 2000-2500 lx, temperature 22-25°C.The following plant growing height: plant's height, internodes number, root length recorded through21 days,

The Murashige- Skoog medium and ahar-ahar in quantity 7 g/l used for quality control.

The cultivar grafting provided on 25 plants with three times repeating.

Results and discussions. The researches results showed the vitamin presence or absence in the nutrient medium, because it has serious impact on tube plants morphogenesis.

The vitamin complex adding in concentration forms 2,0 and 2,5 ml/l into MS medium for variety

Chervona Ruta allowed to form 5,6 and 5,9 internodes. It is on 1,2 and 15 pcs higher in comparison with control. The roots forming consisted of 7,0 and 7,3 pcs, so it is increasing 1,7 and 2,0 pcs on plant. The plants` height increase recorded in mm, (in control 54,1 mm) and roots increase length 12,4 and 19,3 mm (in control 70,3 mm) the same researched variants. (fig. 2.3.1).

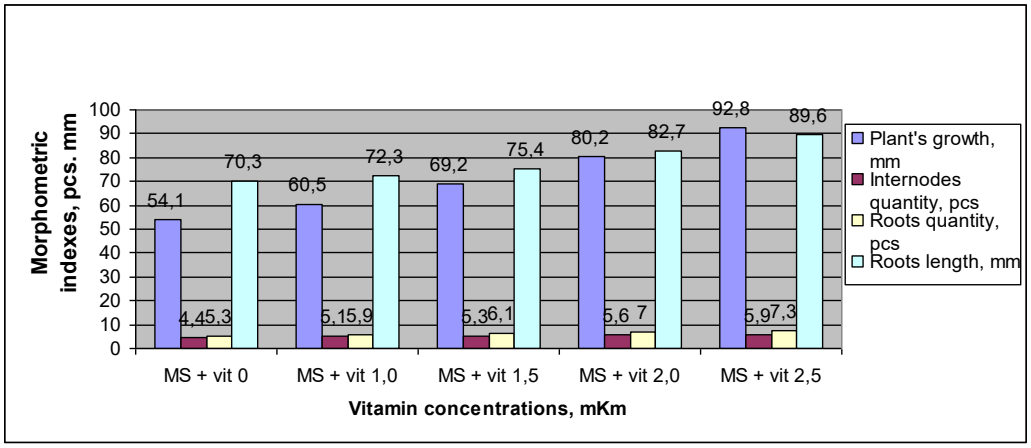


Figure 2.3.1- Potato plants morphometric indexes in cunlture *in vitro in dependence upon the vitamin complex in nutrient medium (UkrSRPQS IPP, cultivar Chervona ruta).*

So the positive vitamin action potato differentiating cultivars in vitro on morphometric indexes determined as per researches results.

Conclusions. The most effective adding vitamin complex to Murashige-Skoog in concentration 2,0 and 2,5 ml/l was for potato plant Chervona ruta morphogenesis growth. The internodes quantity growth determined for roots quantity, plant's height, so there roots quantity and their length, respectfully:5,6 and 5.9 pcs (in control -4,4 pcs), 7,0 and 7,3 pcs (in control 5,3 pcs): 80,2 and 92,8 mm(in control- 54 min); 82,7 and 98,6 mm(in control 70,3 mm).

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