Branching Under the Influence of Substances Growing The "Napoleon" and “Kora Gilos” Varieties of Cherries in *Vitro* Conditions.

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ABSTRACT

The article lists the varietal branching ratio and branch elongation indicators for microclonal branching of cherry varieties under the influence of MS, DKW, and MSТАК in nutrient media under in vitro conditions BAP-0.30, 1.0 mg/l, TDZ – 0.50, 1.0, and MetP - 0.20, 0.30, 0.50, and 1.0 mg/L.

Keywords: Cherry, nutrient medium, explant, growing material, nutrient medium, branching ratio.

I. Introduction.

Today, an average of 9 billion tons of cherries are grown annually in 65 countries. Since 2016-2020, Turkey has taken the lead in cherry growing. On average, more than 800,000 tons of cherries are grown in Turkey per year, and in 2020 this indicator reached 915,000 tons. Cherry cultivation in the USA is an average of 448,000 tons per year. Russia and Iran are 3rd and 4th in the world in terms of cherry cultivation. On average, 273 and 250 tons of cherries are grown each year. Uzbekistan is on the 5th place, and according to FAO, during 2016-2020, an average of 218,000 tons of cherries are grown in our country.

In tissue culture that control growth in the culture of the tissue are an important nutrient component for the development of the cell. Growth-controlling substances stimulate the formation of branches, stopping tin in different concentrationsthat activate and apical thymus [1,2].

There are five classes of growth-controlling substances commonly used In in vitro culture: Auxins, Cytokinins, Gibberellins, Ethylene and Abssizic acid [4].

II. Materials and Methods.

Research in the "Biotechnology" laboratory of the scientific-research institute of horticulture, viticulture and winemaking named after academician Makhmud Mirzaev, On the basis of the driver's methodological manual "artificial (test tube) cultivation from tissues and cells in laboratory conditions" was conducted in “Napoleon” and “Kora gilos” varieties of cherries in 2019-2022years [3].

It is known from the results of the research that rhizogenesis is observed when the amount of auxins is much higher than the amount of cytokinins, and in the opposite case, that is, when the amount of cytokinins prevails, the formation of branches, that is, branching, is observed.

Cherry cultivars were grown in MS control (Murasige and Skug, 1962) and DKW (Driver and Kuniyuki, 1984), MS_{tak} (Murasige and Skug improved) nutrient media with different compositions and concentrations of BAP (benzyl amino purine), TDZ (trodosalline) and MetP (Metatopolin) branched under the influence of hormones.

In the researches, growth regulators BAP-0.30, 1.0 mg/l, TDZ – 0.50, 1.0 and MetP – 0.20, 0.30, 0 were used in various nutrient media for microclonal branching of cherry varieties. ,50 and 1.0 mg/l were studied.

Results.

Under the influence of Ms control nutrient medium growth controllers BAP-1.0 mg/l and MetP - 0.20 mg/l on the branching of the "Kora gilos" variety of cherries, the branching ratio of the variety was 1:5 and the length of the branches was 1.21 cm.

The branching ratio of the variety was 1:5 and the length of the branches was 1.21 cm under the influence of growth regulators BAP-1.0 mg/l and MetP - 0.20 mg/l in the MS control nutrient medium on the branching of the "Kora gilos" variety.

Option 2 under the influence of growth regulators BAP -0.30 mg/l and TDZ - 1.0 mg/l in DKW nutrient medium, the branching ratio of the "Kora gilos" variety was 1:5 and the length of the branches was 1.98 cm, BAP-1.0 mg /l and under the influence of MetP - 0.30 mg/l, the length of the branches of the variety was 2.06 cm, and it was observed that the length of the branches of the variety was 0.93 cm higher than the control option (Table 1).

"Revershon" variety 3 option MStak under the influence of growth regulators BAP-1.0 mg/l and MetP - 0.20 mg/l, the branching ratio of the variety is 1:5 and the length of the branches is 1.75 cm, BAP-1.0 mg /l and under the influence of MetP - 0.50 mg/l, the branching ratio of the variety was 1:6 and the length of the branches was 2.15 cm. Compared to the control variant, it was noted that the branching ratio of the variety was 0.2 units and the length of the branches was 1.12 cm higher. .

The most effective index of branching and the length of the branches for the "Kora gilos" variety of cherry was determined by the fact that the length of the branches is 2.15 cm under the influence of growth regulators BAP-1.0 mg/l and MetP - 0.50 mg/l in the MStak nutrient medium.

Table 1

The effect of different composition and concentration of growing substances on the branching of the "Kora gilos" variety, 2019-2022.

Growing substances, mg/l			**MS (control) nutrient medium + growth medium**		**DKW nutrient medium + growing substances**		**MS enhanced nutrient medium + growing substances**	
BAP	TDZ	Met P	branching ratio	length of branches, cm	branching ratio	length of branches, cm	branching ratio	length of branches, cm
-	0,50	-	1:2	0,28±0,01	1:2	0,93±0,02	1:2	0,61±0,01
-	1,0	-	1:2	0,59±0,01	1:3	0,33±0,01	1:3	0,79±0,01
	0,50	0,30	1:3	1,08±0,04	1:4	1,59±0,01	1:4	1,31±0,04
1,0	-	0,20	1:4	1,21±0,01	1:4	1,97±0,02	1:4	1,42±0,01
1,0	-	0,20	1:4	1,10±0,02	1:4	1,82±0,02	1:5	1,75±0,02
0,30	-	0,50	1:3	0,57±0,01	1:3	0,73±0,02	1:3	0,59±0,01

Growing substances, mg/l			**MS (control) nutrient medium + growth medium**		**DKW nutrient medium + growing substances**		**MS enhanced nutrient medium + growing substances**	
BAP	TDZ	Met P	branching ratio	length of branches, cm	branching ratio	length of branches, cm	branching ratio	length of branches, cm
-	0,50	0,50	1:3	0,43±0,02	1:4	0,84±0,02	1:5	1,69±0,02
1,0	-	-	1:3	0,60±0,02	1:5	1,01±0,02	1:4	0,85±0,02
-	1,0	0,30	1:3	0,73±0,01	1:4	0,93±0,02	1:4	1,13±0,01
-	1,0	0,50	1:4	1,10±0,02	1:4	1,04±0,02	1:4	1,33±0,02
0,30	1,0	-	1:4	1±0,02	1:5	1,98±0,03	1:5	1,42±0,02
-	0,50	1,0	1:4	1,06±0,03	1:4	1,73±0,02	1:4	1,29±0,03
1,0	-	0,30	1:5	1,13±0,01	1:6	2,06±0,02	1:5	1,51±0,01
1,0	-	0,50	1:4	1,03±0,02	1:4	1,67±0,01	1:6	2,15±0,02
LSD (least significant difference) 05			-	0,05	-	0,05	-	0,04
LSD %			-	6,3	-	3.8	-	3,2

The branching ratio of the "Napoleon" variety of cherry was 1:5 and the length of the branches was 1.06 cm under the influence of growth regulators BAP-1.0 mg/l and MetP - 0.50 mg/l in MS control medium.

Option 2, under the influence of growth regulators BAP -1.0 mg/l and TDZ - 0.20 mg/l in DKW nutrient medium, the branching ratio of the "Napoleon" variety was 1:4 and the length of the branches was 1.84 cm, TDZ -0.50 mg/l It was observed that under the influence of l and MetP - 1.0 mg/l, the length of the branches of the variety was 2.07 cm, and the branching ratio of the variety was 0.2 units, and the length of the branches was 0.66 cm higher than the control option.

Table 2

The effect of growing substances with different composition and concentration on the branching of the "Napoleon" variety of cherry, 2019-2022.

Growing substances, mg/l			**MS (control) nutrient medium + growth medium**		**DKW nutrient medium + growing substances**		**MS enhanced nutrient medium + growing substances**	
BAP	TDZ	Met P	branching ratio	length of branches, cm	branching ratio	length of branches, cm	branching ratio	length of branches, cm
-	0,50	-	1:2	0,54±0,02	1:2	1,08±0,02	1:2	1,07±0,02

Growing substances, mg/l			**MS (control) nutrient medium + growth medium**		**DKW nutrient medium + growing substances**		**MS enhanced nutrient medium + growing substances**	
BAP	TDZ	MetP	branching ratio	length of branches, cm	branching ratio	length of branches, cm	branching ratio	length of branches, cm
-	1,0	-	1:2	0,49±0,01	1:4	1,02±0,01	1:3	1,21±0,02
	0,50	0,30	1:3	1,16±0,02	1:3	1,57±0,02	1:4	1,62±0,01
1,0	-	0,20	1:3	1,05±0,02	1:4	1,84±0,02	1:4	1,76±0,01
1,0	-	0,20	1:5	1,45±0,02	1:5	1,73±0,02	1:3	1,64±0,02
0,30	-	0,50	1:4	1,29±0,01	1:4	1,02±0,01	1:3	0,51±0,02
-	0,50	0,50	1:4	1,1±0,03	1:3	0,83±0,03	1:4	1,05±0,02
1,0	-	-	1:3	0,98±0,03	1:4	0,85±0,03	1:3	1,19±0,02
-	1,0	0,30	1:3	1,02±0,02	1:4	1,02±0,02	1:3	1,03±0,03
-	1,0	0,50	1:4	1,23±0,01	1:4	1,09±0,01	1:4	1,33±0,01
0,30	1,0	-	1:5	1,32±0,01	1:5	1,52±0,01	1:5	1,82±0,01
-	0,50	1,0	1:4	1,41±0,02	1:6	2,07±0,02	1:6	2,31±0,02
1,0	-	0,30	1:5	1,44±0,03	1:5	1,48±0,03	1:5	1,41±0,02
1,0	-	0,50	1:5	2,06±0,02	1:6	2,82±0,02	1:6	2,3±0,01
LSD (least significant difference) 05			-	0,05	-	0,05	-	0,05
LSD %			-	4,5	-	3.4	-	3,5

Option 3 under the influence of growth regulators BAP-0.30 mg/l and MetP – 1.0 mg/l in the MStak nutrient medium, the branching ratio of the variety was 1:5 and the length of the branches was 1.82 cm, TDZ -0.50 mg/l and under the influence of MetP - 1.0 mg/l, the branching ratio of the variety was 1:6 and the length of the branches was 2.31 cm, compared to the control variant, it was noted that the branching ratio of the variety was 0.2 pieces and the length of the branches was 0.90 cm higher (table 2).

Conclusion.

For microclonal branching of cherry cultivars, growth regulators BAP-0.30, 1.0 mg/l, TDZ – 0.50, 1.0 and MetP – 0.20, 0.30, 0.50 and 1 ,0 mg/l, the best branching index for the “Kora gilos” variety was 2.15 cm in the growth control substances BAP-1.0 mg/l and MetP - 0.50 mg/l in the MS_{tak} nutrient medium, with the length of the branches being 2.15 cm was determined.

The most effective index of branching and the length of branches for “Napoleon” variety of cherry was determined by the effect of growth regulators BAP-1.0 mg/l and MetP – 0.50 mg/l in DKW nutrient medium with the length of branches being 2.82 cm.

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