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THE INFLUENCE OF HORMONAL BALANCE AND IN VITRO CULTURE DURATION ON THE *MOMORDICA CHARANTIA* CALLUS GROWING

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TIMISOARA - 2016

GENERAL INFORMATION

- is a medicinal plant of a tropical origin
- Curcubitaceae Family
- is very rich in antioxidants, peptides like insulin, alkaloids, glycosides, vitamins A, B, C, flavonoids, beta-carotene, lutein and is low in carbohydrates, fat, with little calories.

AIM: Selection of tissue lines at bitter melon with a good proliferative capacity, which can be cultivated in repeated series of artificial culture, for a long time

MATERIAL AND METHODS

The bitter melon callus, induced on cotyledon explants has been grown on a culture medium MS (Murashige and Skoog, 1962) supplemented with different hormonal balances, in which we associate two auxins (NAA and 2,4-D) with cytokinin BAP as in the Table 1.
The callus cultivation was carried out in the growth chamber at a temperature of 24°C with a photoperiod of 16 hours light and 8 hours dark. The callus was cultivated for 24 days (a series of culture), with measurement of callus growth at 8, 16 and 24 days.
To determine the significance of differences between hormonal balances and periods of the *in vitro* culture, the processing of experimental data was done by analysis of variance and t test for bifactorial experience type 7 x 3, four repetitions.
The accuracy of those estimates was evaluated by means of coefficient of determination (R^2)

Variants	Phytohormons (mg/l)		
	NAA	2,4-D	BAP
BH1	1,5		1
BH2	0,2		1
BH3	1		1
BH4		1	0,5
BH5		1,5	1
BH6	1,5		0,5
BH7		2	1

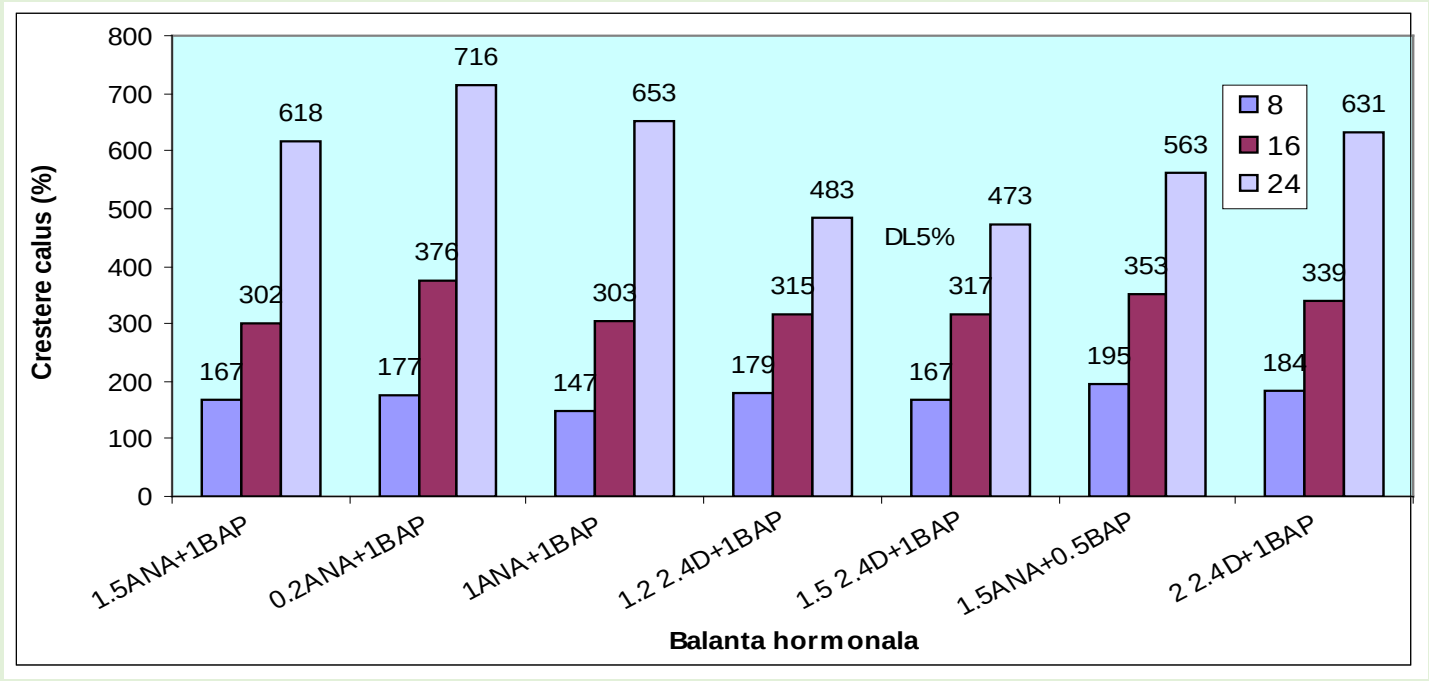
OBTAINED RESULTS

1.THE EFFECT OF THE HORMONAL BALANCE AND *IN VITRO* CULTURE DURATION ON THE GROWTH OF *MOMORDICA CHARANTIA* CULTURE CALLUS

HORMONAL BALANCE (mg/l)	Culture duration (days)				
	8	16	24		$S_{\%}$
1.5 NAA+1BAP	z166,5a	y301,5a	x618,0ab	362,0±61,1	58,51
0.2NAA+1BAP	z177,0a	y375,5a	x715,5a	422,7±70,5	57,79
1NAA+1BAP	z147,0a	y302,5a	x653,0ab	367,5±66,7	62,89
1.2 2.4D+1BAP	z179,0a	y315,0a	x483,0cd	325,7±41,9	44,62
1.5 2.4D+1BAP	z167,0a	y317,0a	x473,0d	319,0±39,9	43,28
1.5NAA+0.5BAP	z194,5a	y352,5a	x563,0bcd	370,0±53,1	49,69
2 2.4D+1BAP	z183,5a	y339,0a	x631,0ab	384,5±58,3	52,54
	173,5±4,9	329,0±11,6	590,9±25,1	364,5±21,1	
$S_{\%}$	14,84	18,61	22,51	52,93	

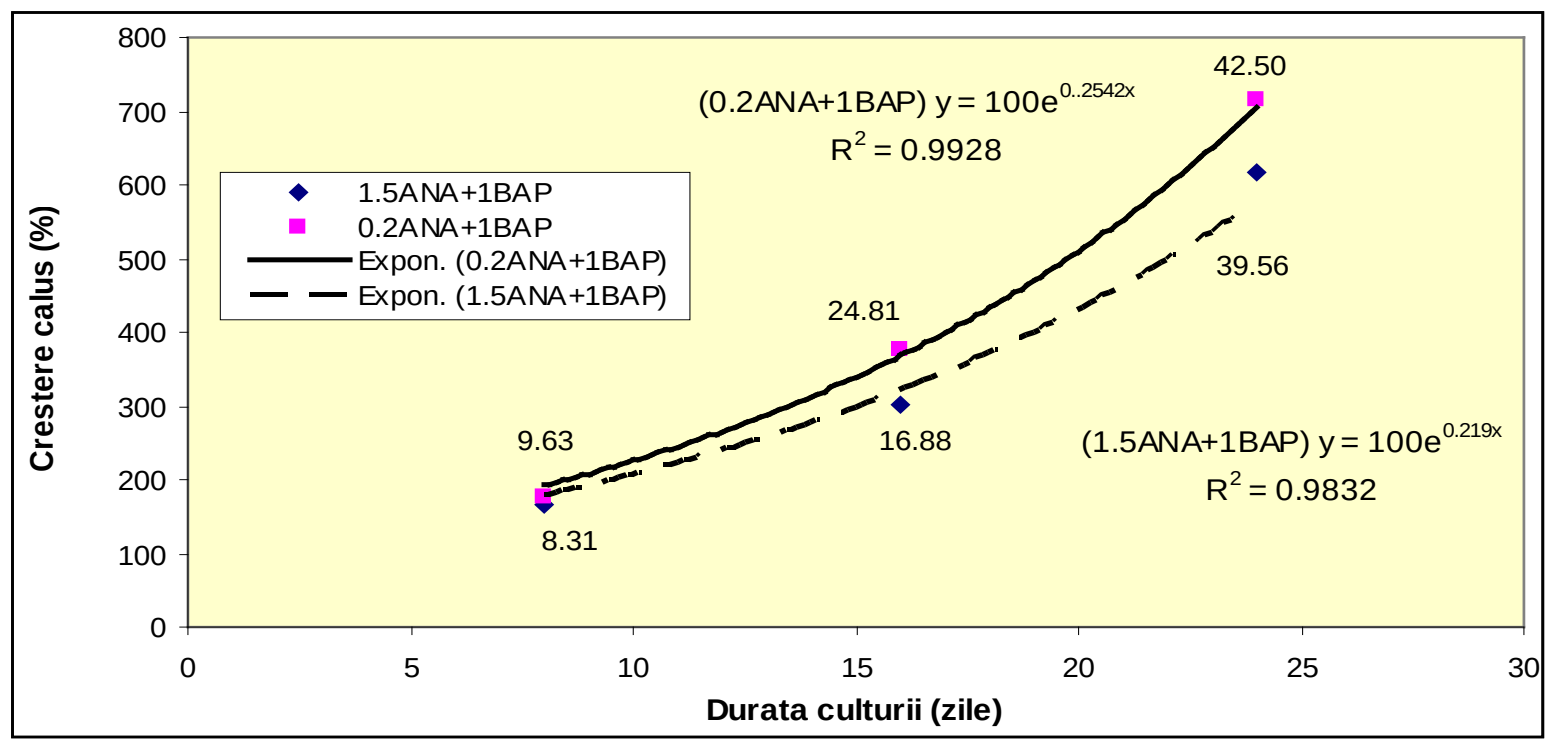
- the duration of *in vitro* culture has an effect on the bitter melon callus growth recording changes during the 3 periods for determination between all the hormonal balances of our experiment
- the effect of the hormonal balance on *Momordica charantia* callus growth in the first 16 days of cultivation is not observed
- the 17th day of cultivation we can see influences of hormonal balances on the callus growth

2. THE GROWTH OF *MOMORDICA CHARANTIA* CALLUS UNDER THE EFFECT OF DIFFERENT HORMONAL BALANCES DURING *IN VITRO* CULTURE



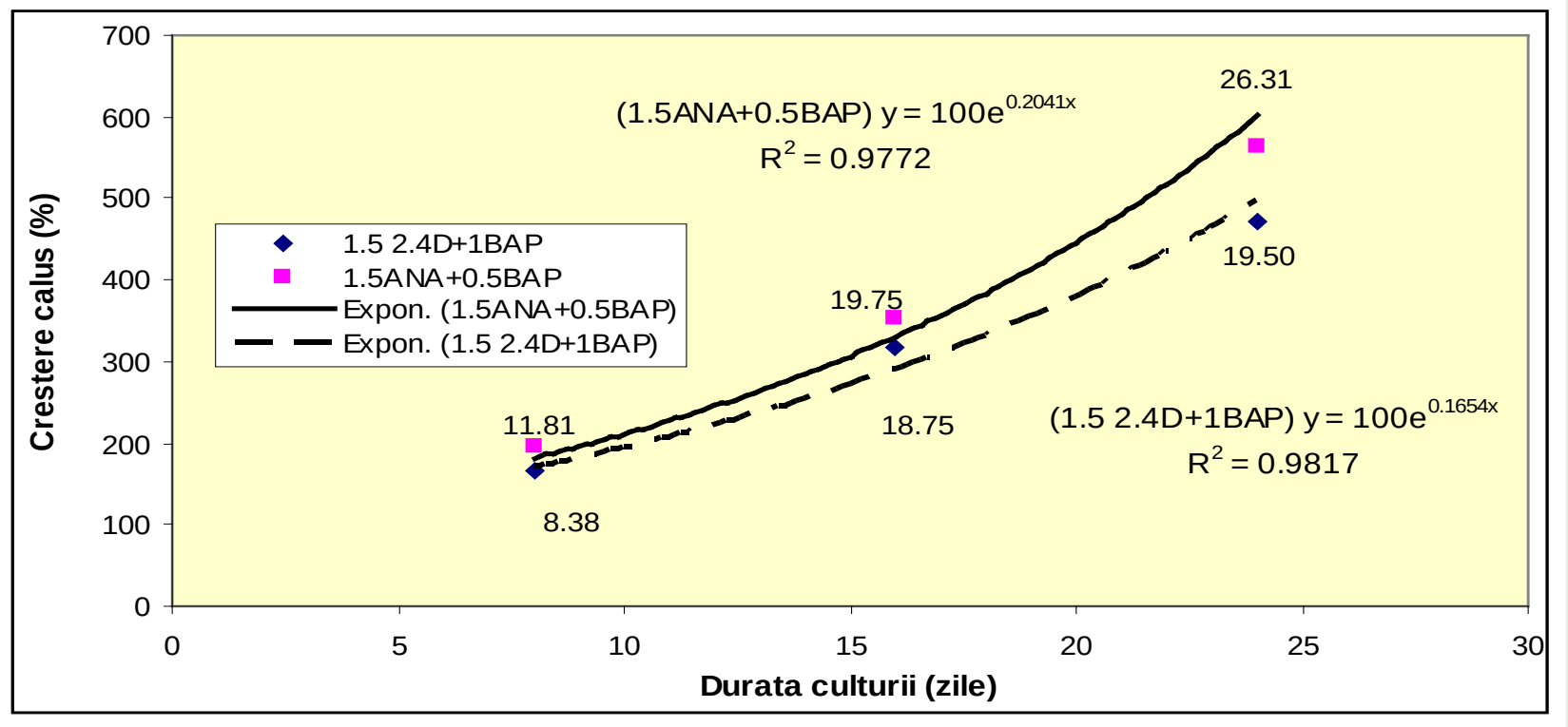
- procentual increase of callus growth at the three periods of culture
- best results were recorded using the hormonal balance 1.5mg /l NAA + 0.5mg /l BAP followed by 2 mg /l 2,4-D + 1mg /l BAP (first 7 days)
- best results were obtained using hormonal balance 0.2mg /l + NAA 1 mg /l BAP followed by 1.5 mg /l NAA + 0.5 mg /l BAP (after 16 days)
- bitter melon callus growth continued under the influence of hormone variant was 0.2mg /l NAA + 1 mg /l BAP which gave the best results, followed by 1 mg /l NAA +1 mg /l BAP

3.THE GROWTH RATE OF *MOMORDICA CHARANTIA* CALLUS UNDER THE HORMONAL BALANCE 1.5MG / L NAA + 1MG /L BAP AND 0.2MG /L NAA + 1MG /L BAP



Both hormonal balances are observed during the study with progressive values between 9.63 and 42.50% / day version 0.2mg /l NAA + 1mg /l BAP , while in the combination of 1.5mg /l NAA + 1mg /l BAP gave an amplitude callus development reduced to the range of 8.31 to 39.56% / day. As such, significant deviations were found between the three periods *in vitro* culture of the two variants, in terms of intensity of callus growth. It also notes that the average of callus daily growth rate was 21.90% for hormonal balance 1.5mg /l NAA + 1mg /l BAP and 25.42% Balance 0.2 mg /l NAA + 1mg /l BAP amid high accuracy of these estimates (R2> 0.98).

4. THE *MOMORDICA CHARANTIA* CALLUS GROWTH RATE FOR HORMONAL BALANCES 1.5MG / L NAA + 0.5MG / L BAP AND 1.5MG / L 2,4-D + 1MG / L BAP

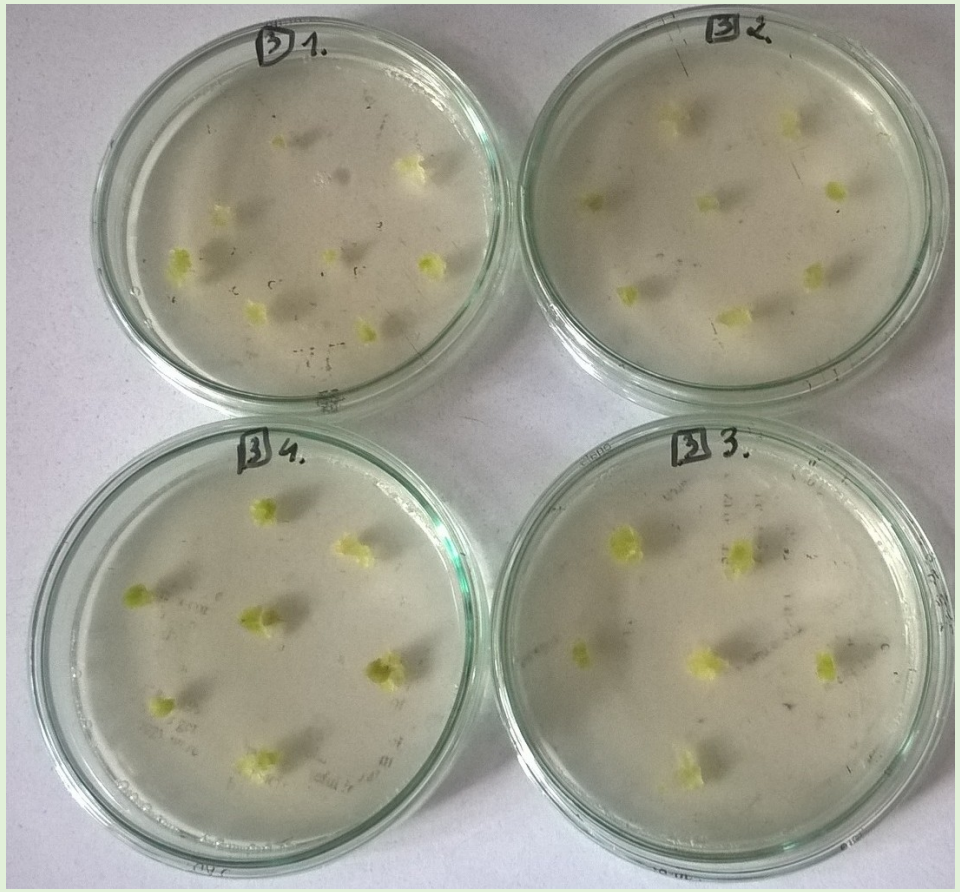


Using the hormonal combination of 1mg/l ANA + 1mg/l BAP, the callus development showed a gradual growth associated with significant variances between the three periods of callus culture, with an average daily rate of 5.88% in the first eight days up to 43.81% the last eight days of culture

And the hormonal balance 1.5 mg /l 2.4D + 1mg/l BAP give a progressive daily rhythm of growth with values between 9.88 and 21% due to significant variation between the three periods of cultivation. Across the *in vitro* culture period, average daily growth of callus had values of 16.36% at the hormonal balance 1.5mg /l 2.4-D + 1 mg/l BAP respectively 22.06% using the variant 1ng/l ANA + 1mg/l BAP . High precision for these estimates is underscored by the high values of coefficients of determination (R2 = 0.9474 to 0.9834).

CONCLUSIONS

- the best results were recorded in a association of auxin NAA with cytokinin BAP; hormonal balance 1 mg /l NAA + 1 mg /l BAP led to an increase of 43.81% in 24 days of culture, with an average daily rate of 22.06% with a accuracy of these estimates between 0.9474 to 0.9834.
- the best rate of callus growth was in the range of 16 to 24 days of cultivation with an average daily growth of 25.42% for the hormonal balance 0.2mg / l NAA + 1mg / l BAP and 21.90% for hormonal balance 1.5mg /l NAA + 1mg /l BAP, amid high accuracy of these estimates (R2> 0.98).
- the reduction of cytokinin amount decreases the callus growth rate, while the reduction on the amount of auxin has a beneficial effect on the growth of callus. The auxin NAA is favorable to callus growth compared with the auxine 2,4-D.
-to obtain biomass callus of *Momordica charantia* L. is necessary at least 24 days of in vitro cultivation.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THANK YOU FOR YOUR ATTENTION!