THE EFFECT OF COLCHICINE UPON TO SOME MORPHOLOGICAL CHARACTERS AT SYLIBUM MARIANUM IN GENERATION M1

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The aim of this study is to determine the colchicines effect, like a mutagen agent, in different concentrations upon the morphological characters to Sylibum marianum. Treatments were made to Sylibum marianum seeds, the colchicines influencing the germination and also the morphological characters of milk tishle plants. Colchicines is a toxically substance for cellular spindle and suing on sulphuric bundle from proteins and to ribose's molecules from RNA. After the treament with colchicines the mitotic division it is modificate, establishing the mophological characters. In the experience it was followed some morphological modifications on: rises percentage, survive percentage of milk tishle plants, height of plants, and number of ramifications/plant, number of seeds/capitula's and on seeds weight/plant. Colchines had an inhibitory effect on the percentage of plants rises in generation M1 for all variants of treatment. When the colchicines concentration was bigger the inhibition effect on development plant was very accented. The morphological characters will be followed in M2 generation, because in next generations can be possiblethe identification of mutant genotypes.

***Keywords**: milk tishle, colchicines, morphological characters, high, ramification, capitula's, and seeds.*

Colchicines it is a mutagen agent which have the propriety to influence the mitotic division or mitosis. By application on plants were obtain the varieties with a big number of genomes, face of diploid form (2n=2x=34) (polyploidy) and modification of morphological characters.

The alkaloid from *Colchicum autumnale*, colchicines, it was uncovered in 1819 by Pelletier and Caventou, an after a period of time it was synthesised by A.E. Eschnmoser and E.E. van Tamelen (1959) [1].

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MATERIAL AND METHOD

For seeds of Sylibum marianum, De Prahova local population, treatment it was using colchicines, in solutions of different concentrations: 0.01%, 0.05%, 0.10%, 0.15% and 0.20%, each concentration establishing on seeds for 4 hours. The experiment was placed using the randomized blocks method, with 5 variants and a control variant, each variant having three repetitions:

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The dates obtained were synthesise and performing with technical experience methods, with variance analyse and limit difference [2,3,4,5].

RESULTS AND DISCUSSIONS

The researches using like mutagen agent, colchicines, have a double aim: one theoretical, to appreciate the plant sensibility to action of different concentration applied to milk thistle, and a practical one, to induce the morpho-physiological modifications to plants in generation M1 and in others segregation generations.

The plants sensibility at colchicines treatments, and with other mutagens, it can be appreciated with two test types: early tests (seeds germination, the frequency of chromosomal aberration in mitosis, the length of roots and stems), and latest tests (rises and survival percentages of plants, frequency of chromosomal aberration in meiosis and modification of some morpho-phisiological characters in generation M1) [6].

The rises percentage of plants in the field (*tab.1*) had values between 93.2% at 0.20% concentration and 96.2% at control variant, some others variants having wrangler values. Negative differences compared with control variant it was very significant in all variants.

In table 2 are restored medium values of survival percentage of plants in the field after the colchicines treatment. At control variant, the survival percentage have the medium value of 93.7%. Variant 0.01% of colchicines had a easier stimulation effect, exceed the control variant with 0.2%, insignificantly difference. Treatments with colchicines, at some others concentrations established a diminution of this character differences against control variant being very significant.

Table 1

Colchicines effect upon the rises percentage of plants in generation M1

Concentration %	Average	% against control	Differences	Signification
Control	96.2	100.00	0.0	-
0.01	95.3	99.06	-0.9	000
0.05	94.8	98.54	-1.4	000
0.10	94.4	98.13	-1.8	000
0.15	93.7	97.40	-2.5	000
0.20	93.2	96.88	-3.0	000
DL 5%: 0.3%; DL 1%: 0.4%; DL 0.01%: 0.5%				

Table 2

Colchicines effect upon the survive percentage of plants in generation M1

Concentration %	Average	% against control	Differences	Signification
0.01	93.9	100.21	0.2	-
Control	93.7	100.00	0.0	-
0.05	91.6	97.76	-2.1	000
0.10	90.8	96.91	-2.9	000
0.15	87.0	92.85	-6.7	000
0.20	82.6	88.15	-11.1	000
DL 5%: 0.9%; DL 1%: 1.2%; DL 0.01%: 1.6%				

The plants height have values between 46.8 cm at 0.20% concentration and 53.4% at control variant.

Negative differences against control were distinguish significantly in case with 0.15% and 0.20% colchicines treatment. Some others treatments are practical the same with control variant (*tab. 3*).

Table 3

Colchicines effect upon the height of plants

Concentration %	Average	% against control	Differences	Signification
Control	53.4	100.00	0.0	-
V1	50.0	93.63	-3.4	-
V2	50.0	93.63	-3.4	-
V3	50.0	93.63	-3.4	-
V4	46.8	87.64	-6.6	00
V5	46.8	87.64	-6.6	00
DL 5%: 3.9 cm; DL 1%: 5.5 cm; DL 0.01%: 7.9 cm				

Colchicines concentration at 0.10%, 0.15% and 0.20% had a decrease of ramification number/plant and of seeds/capitula's, negative differences against control variant being very significantly.

Those little colchicines concentrations, 0.01% and 0.05%, in case of this two characters analysed, were establish approach of control variant values (*tab. 4,5*).

Table 4

Colchicines effect upon the ramifications percentage of plants

Concentration %	Average	% against control	Differences	Signification
Control	19.7	100.00	0.0	-
V2	18.3	92.89	-1.4	-
V1	18.3	92.89	-1.4	-
V3	15.7	79.70	-4.0	000
V4	15.3	77.66	-4.4	000
V5	13.7	69.54	-6.0	000
DL 5%: 1.5 ramn./pl; DL 1%: 2.1 ramn./pl; DL 0.01%: 3.1 ramn./pl				

The weight of seeds had values between 32g at 0.20% concentration and 42g at control variant. Differences against control was distinguish significantly for variant treated with 0.20% colchicines (*tab. 6*).

Table 5

Colchicines effect upon the seeds number/capitula's..

Concentration %	Average	% against control	Differences	Signification
Control	119	100	0.0	-
V1	117	98	-2.0	-
V2	109	91	-10	-
V3	97	81	-22	000
V4	95	79	-24	000
V5	89	74	-30	000
DL 5%:10.1 ach/c.; DL 1%: 14.4ach./c.; DL 0.01%: 20.9 ach./c.				

Table 6

Colchicines effect upon the weight of seeds/plant

Concentration %	Average	% against control	Differences	Signification
Control	42	100.00	0.0	-
V1	40	95.24	-2.0	-
V2	39	92.86	-3.0	-
V3	39	92.86	-3.0	-
V4	37	88.10	-5.0	-
V5	32	76.19	-10.0	00
DL 5%: 5.5 g; DL 1%: 7.9 g; DL 0.01%: 11.4 g				

From all dates obtained we point out that any quantitative analysed factor hasn't outrun the control variant in positive direction. In general, by variance analysis, were obtained the negative values, being underling with control in quantitative point of view, but after the analyses obtained we can ascertain that the variants treated with 0.15% and 0.20% colchicines registered the negative differences against control variant, significantly in the experiment (*fig. 1*).

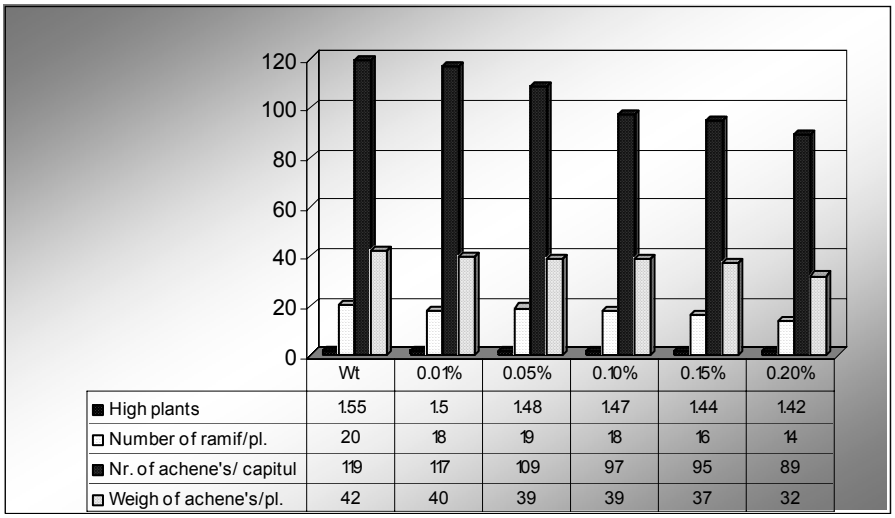

Figure 1. **Averages of characters analysed on plants in generation M1**

The correlation coefficient r=0.90447, positive, it is significantly and indicate a closely dependence of height of plants and number ramification /plant (*fig. 2*).

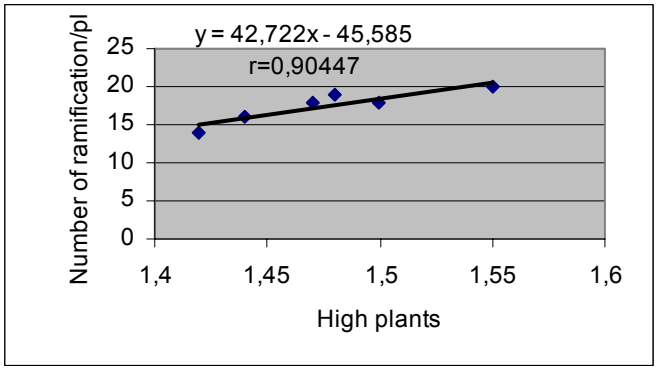

Figure 2, **Straight and regression equation of ramification number/plant against plants height**

In case of bundle between seeds number/capitula's and weight of seeds/plant it was registered a linear correlation, positive, and the correlation coefficient value, r=0.85637 is significantly for both analyzed characters (*fig. 3*).

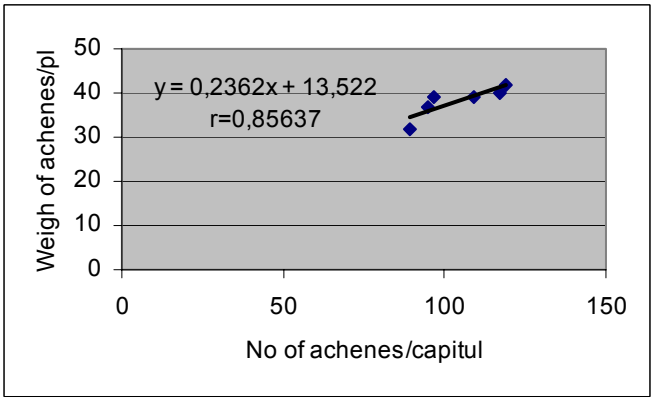

Figure 3. **Straight and regression equation of seeds weight/plant against seeds number/capitula's**

CONCLUSIONS

1. Used in big doses colchicines have an inhibitory character for plants development.

3. Colchicines had an inhibitory effect on the percentage of plants rises in generation M1 for all variants of treatment.

4. When the colchicines concentration was bigger the inhibition effect on development plants was very accented.

5. Negative differences, very significantly for all determination which have being made were registered at concentration 0.15% and 0.20%.

6. These morphological characters will be followed in M2 generation, because after the recessive homozygote gene can be possible the identification of mutant genotypes, value with theoretical and practical aspect.

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