VARIABILITY OF RNA CONTENT IN THE LEAVES OF *GRASĂ OF COTNARI* GRAPE VINE SORT

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The paper presents the variability of the RNA content of a mature leaf from the fertile of shoots belonging to the Grasă of Cotnari grape vine cultivar, analysed in different phenological phases: unbudding, flowering, ripening and full maturation of grapes. On constate that at unbudding, the RNA content is maximum, because in this phases, the proteinic synthesis are very intense. Starting with the flowering phenophase, the quantity of RNA is decreasing rapidly. This phenomenon is directly correlated with the increased intensity of the biogenesis processes of the cellular organites. At ripening and full maturation of grapes, the RNA content diminish very much. The variation of RNA content is big in the unbudding, flowering and full maturation of grapes and very big in ripening phenophases. The values of the RNA content of the leaves belonging to the Grasă of Cotnari cultivar offer the possibility of analysing different factors regarding the complexity of the genetic material of the studied genotype.

Keywords*: RNA, unbudding, flowering, ripening, full maturation of grapes.*

The cell ribonucleic acid (RNA) has a complex role in transmitting the genetic information from DNA to the centres of protein synthesis (ribosome) and in decoding the genetic message [4].

Considering the essential role of RNA in metabolic processes and plant life, we have determined the content of RNA in the vine variety *Grasă of Cotnari* [5, 6].

MATERIAL AND METHOD

The biologic material used in the experiment has been represented by *Grasă of Cotnari* grape vine sort cultivated in the ampelographic collection of "V. Adamachi" Experimental Didactical Station belonging to University of Agricultural Sciences and Veterinary Medicine „Ion Ionescu de la Brad" from Iassy.

From the relevant sort there were sampled mature leaves from the fertile of shoots from 30 grape vines, in 4 phenophases: unbudding, flowering, ripening up to the full maturity of grapes.

From the relevant leaves 50 mg of mesophil existing between N1 and N2 nervures was sampled, as close as possible to the leaf stalk [2, 3].

10 determinations of RNA content were effected for each phenophases.

The extraction of nucleic acids was made after Spirin method [7].

The achieved results for each phenophases have been analyzed from biostatical point of view [1].

RESULTS AND DISCUSSIONS

There is ascertained a progressive reduction of RNA content in the mature leaf at the studied grape vine sort as long as the grape vine progresses in vegetation.

In unbudding phenophase, when the grape vine passes from the resting condition into the vegetation condition, the metabolism is intensified, accelerated bio-synthesis processes are produced so that an increased RNA quantity is evidenced that has a variation ranking between 5.12 and 7.89 mg/g with an average of 6.37 mg/g *(table 1, fig.1).*

A proper nitrogen feeding causes a normal growing as well as a proper colouring of the leaf that allows the achievement of photosynthesis in the most favourable conditions and at the same time, the differentiation of floriferous buds is favoured. Therefore, at the flowering process, the quantity of RNA is decreased (1.82 mg/g) *(table 1, fig.1).*

Table 1

The RNA content in the leaves of *Grasă of Cotnari* grape vine sort

Phenophase	The average value (mg/g)	Standard deviation (S)	Variability coefficient (S%)
Unbudding	6.37	1.396	21.92
Flowering	1.82	0.511	28.08
Ripening	1.16	0.473	40.52
Full maturation of grapes	1.03	0.252	24.47

The quantity of RNA decreases continuous in the ripening process, the average being of 1.16 mg/g *(table 1, fig.1).*

At the full maturation of grapes, the quantity of RNA is reduced until 1.03 mg/g *(table 1, fig. 1).*

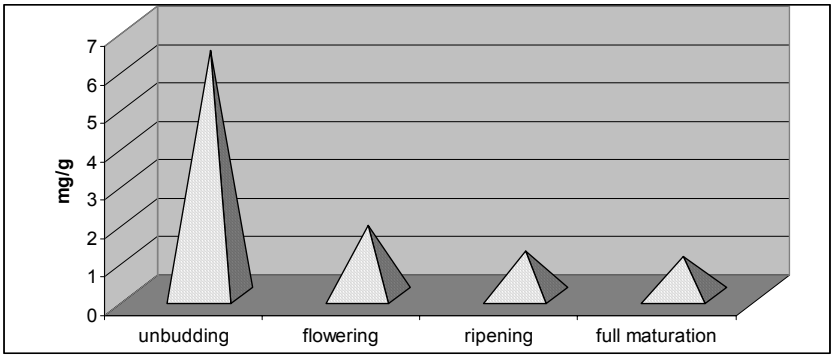

Figure 1. **The RNA content in the leaves of *Grasă of Cotnari* grape vine sort**

The variation of RNA content (S%) was big in the unbudding, flowering and full maturation of grapes phenophases and very big in ripening phenophase *(table 1, fig. 2).*

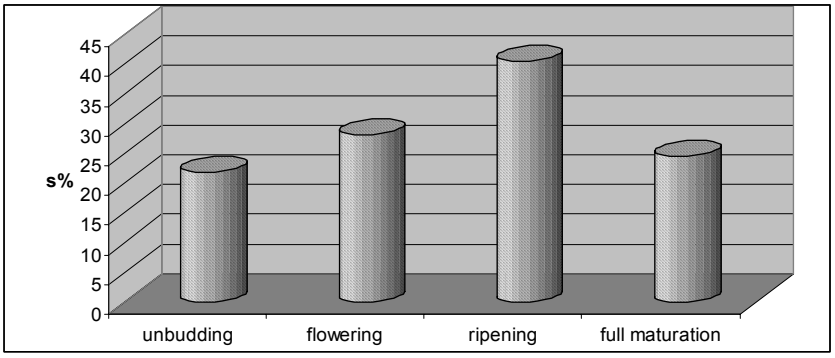

Figure 2. **The variability of RNA content in the leaves of Grasă of Contnari grape vine sort**

By comparison with DNA content in the mature leaf of *Grasă of Cotnari* [5], on finding of large variation of RNA.

The limit differences of RNA content in the mature leaves of *Grasă of Cotnari* grape vine sort is represented in *table 2.*

Table 2

The RNA content in the leaves of *Grasă of Cotnari* grape vine sort

Phenophase	Average value (mg/g)	Difference by comparison control	Significance of difference
Average (control)	2.595	-	-
Unbudding	6.37	+ 3.77	***
Folwering	1.82	- 0.78	-
Ripening	1.16	- 1.44	0
Full maturation of grapes	1.03	- 1.57	0
DL 5% = 1.36, DL 1% = 1.95, DL 0.1% = 2.87			

CONCLUSIONS

1. RNA content in the mature leaves of *Grasă of Cotnari* grape *v*ine sorts is quite high in the unbudding phenophase, when the metabolism is intensified.

2. Starting with the flowering phenophase, the quantity of RNA is decreasing rapidly. This phenomenon is directly correlated with the increased intensity of the biogenesis processes of the cellular organites.

3. The quantity of RNA decreases continuous until the full maturation of grapes phenophase.

4. The variation of RNA content in mature leaves of *Grasă of Cotnari* grape vine sort is big in the unbudding, flowering and full maturation of grapes phenophase and very big in ripening of grapes phenophase.

BIBLIOGRAPHY

1. Ceapoiu, N., 1968 – *Metode statistice aplicate în experienţele agricole şi biologice,* Ed. Agrosilvică, Bucureşti.

2. Glick, B.R., Pasternak, J.J., 1998 – *Molecular Biotechnology – Principles and Applications of Recombinant DNA 2nd,* Ed. ASM Press, Washington D.C.
3. Kleber, H.P., Schlee, D., Schopp, W., 1990 – *Biochemisches Praktikum.* Jena: Gustav Fischer Verlag
4. Pădureanu, Silvica, 2004 – *Elemente de Genetică Moleculară,* Ed. „Ion Ionescu de la Brad" Iassy.
5. Pădureanu, Silvica, 2006 – *Variability of DNA content in the leaves of Grasa of Cotnari grape vine sort,* Lucr. şt. vol. 49, ser. Agronomie, U. Ş. A. M. V.,Iassy, p. 269-272.
6. Pădureanu, Silvica, 2006 – *Variability of nucleic acids content in the leaves of Feteasca alba grape vine variety, Proceedings, Ed. „Ion Ionescu de la Brad"*, Iassy, p. 553-558
7. Spirin, A., 1958 – *Spektrofotometriceskoe opredelenie summarnovo kolicestva nucleinovih kislot*, Biohimia, p. 656.