

**CONTRIBUTIONS AT THE PHARMACOGNOSTIC STUDY OF  
*ELAEAGNUS ANGUSTIFOLIA* L. SPECIES.  
NOTE II: THE INFLUENCE OF SOME EXTRACTS FROM FLOWERS  
AND YOUNG BRANCHES ON THE GERMINATION, GROWING AND  
MITOSIS FILM AT *TRITICUM VULGARE***

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**Abstract:** The extractive solutions 10% obtaining for flowers and young branches by maceration 8 days in ethanol 10% (A<sub>1</sub>, respective B<sub>1</sub> solutions) and in ethanol 40% (A<sub>2</sub>, respective B<sub>2</sub> solutions) was tested on the *Triticum vulgare* grains for discovery a some cytotoxic and cytostatics effects of *Elaeagnus angustifolia* L. species (*Elaeagnaceae*). The determinations were made beside a witness maintained in water.

Was aimed the influence of extractive solutions about germinations and rootlet growing over 5 days. Also, was aimed the alterations about mitosis film generate of the treatment with extractive solutions (A<sub>1</sub>, A<sub>2</sub>, B<sub>1</sub>, B<sub>2</sub>) at 6 hours and 24 hours interval.

Was observed that the *Triticum vulgare* grains germination is not inhibited of any extractive solutions and the rootlet growing of germinated *Triticum vulgare* grains in these conditions was late and their aspect was thick and forked.

At the finished of the elongation test, the rootlet growing, at the *Triticum vulgare* grains germinated in water, caused by the A<sub>1</sub> and B<sub>1</sub> solutions (88,5%, respective 69,2%) is grater then the one produce by the A<sub>2</sub> and B<sub>2</sub> solutions (80,7%, respective 65,3%). Also, the inhibition is most intense at the extractive solutions obtaining by flowers (A<sub>1</sub> – 88,5% and A<sub>2</sub> – 80,7%) then the other obtaining by young branches (B<sub>1</sub> – 69,2% and B<sub>2</sub> – 65,3%).

The rootlet aspect is modified beside witness, become thicker and forked, as preceding event.

Concerning cellular division the extractive solutions have not citotoxic effects. The only alteration observed is a heterocromatinisation of the genetic material round about nucleus membrane, in prophase.

We believe that the rootlet growing inhibition produce by extractive solutions is caused by flavonoides, compound well-known in reference material for their antiauxinic properties.

### **Introduction**

Known the quality of vegetal cell like a biological material for the determination of the citostatic or citotoxic properties for certain natural or synthetic substances, we proposed to observe the possible alterations to the germinations, rootlet growing and mitosis film produced by the flavonosides of flowers and young branches of *Elaeagnus angustifolia* L. [1], about the *Triticum vulgare* grains.

The research objectives are:

- establish the compounds of extractive solutions obtaining by flowers and young branches influence about the *Triticum vulgare* grains germinations;
- determination of there effect about rootlet growing to the germinated *Triticum vulgare* grains;
- specifications to the possible alteration about mitotic film.

### Material and Method

The drug is represented by the flowers and young branches of *Elaeagnus angustifolia* L., reaping in sunny period, from Constanta and environment, in May-June 2004.

The extractive solutions 10% was obtaining by flowers and young branches maceration 8 days in ethanol 10% (A<sub>1</sub>, respective B<sub>1</sub> solutions) and in ethanol 40% (A<sub>2</sub>, respective B<sub>2</sub> solutions) [4]. For citostatic and citotoxic effects determination was using Constantinescu method, *Triticum* test [3], with "selection *Triticum vulgare* grains, "Flamura 85" from Valul lui Traian experiment station.

The *Triticum vulgare* grains wetted 24 hours in boiled and cooled water, was maintained, for germination, in Petri boxes with 10 cm diameter, till the rootlet was growing at 10±1 mm length [3]. In 4 Petri boxes, coated with filter paper, was put in 15 ml of each extractive solution (A<sub>1</sub>, A<sub>2</sub>, B<sub>1</sub>, B<sub>2</sub>) and was let to evaporate. Then was put in each boxes all 15 ml water boiled and cooled [2] and was introduced 5 *Triticum vulgare* germinated grains and 5 *Triticum vulgare* wetted 24 hours grains.

Was observed and measured over 5 days at 24 hours distances the rootlet growing at *Triticum vulgare* germinated grains, respective germination of *Triticum vulgare* wetted 24 hours grains.

The extractive solutions influence about mitosis film was observed at 6 hours and 24 hours interval since to the insert the *Triticum vulgare* germinated grains in extractive solution. The determinations was made beside a witness (M), maintained in boiled and cooled water, in the same conditions like samples.

After the rootlet section at 5 mm of the top and colouring with diluted acetic orceine solution, this displayed on the microscopic blade and crushed by simple press with lamella. The microscopic examination and taking the photos was made at NOVEX microscope with EUROMEX camera (Holland).

### Results and Discussions

Was observed that any extractive solution no inhibits the germination of *Triticum vulgare* grains, but the rootlet growing of *Triticum vulgare* germinated grains in these conditions was late and their aspect was thick and forked.

The rootlet growing at the *Triticum vulgare* germinated in water grains is inhibited by all extractive solutions. The results obtaining was contents in table 1 and figure 1.

**Table 1: Influence beside the rootlet growing**

Extractive solution	Rootlet growing (mean / day in cm)						% inhibition	Rootlet aspect
	initial	I-st day	II-nd day	III-rd day	IV-th day	V-th day		
Witness	1	3,5	6	9	10	13	-	thin
A <sub>1</sub>	1,1	1,5	1,5	1,5	1,5	1,5	88,5%	thick
A <sub>2</sub>	1	1,5	2	2	2,5	2,5	80,7%	thick
B <sub>1</sub>	1	3	3,5	3,5	3,5	4	69,2%	thick
B <sub>2</sub>	1	2,5	3	3	4	4,5	65,3%	thick

At the finished of the elongation test, the rootlet growing, at the *Triticum vulgare* grains germinated in water, caused by the A<sub>1</sub> and B<sub>1</sub> solutions (88,5%, respective 69,2%) is grater then the one produce by the A<sub>2</sub> and B<sub>2</sub> solutions (80,7%, respective 65,3%). Also, the inhibition is most intense at the extractive solutions obtaining by flowers (A<sub>1</sub> – 88,5% and A<sub>2</sub> – 80,7%) then the other obtaining by young branches (B<sub>1</sub> – 69,2% and B<sub>2</sub> – 65,3%).

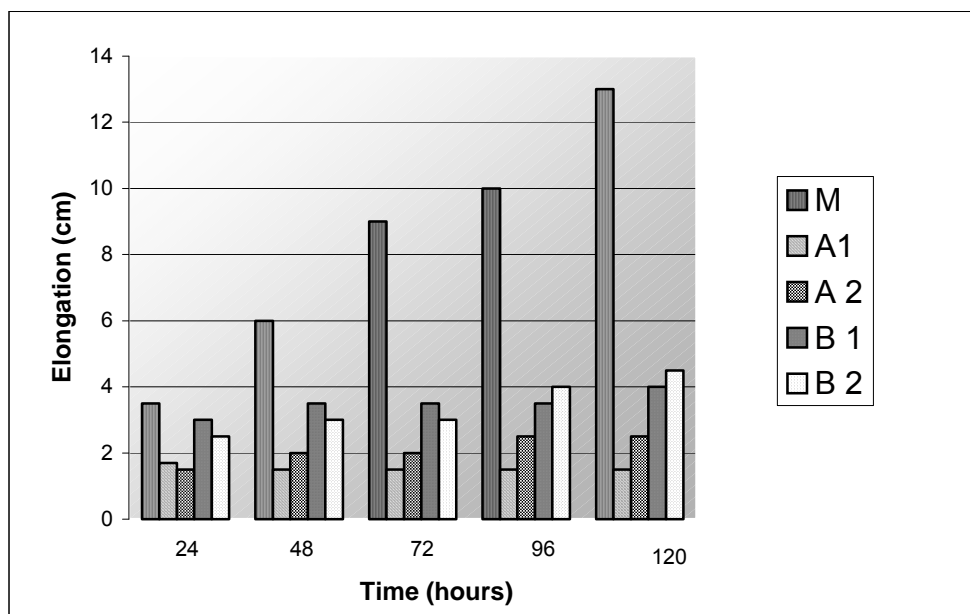


Fig. 1: Inhibition caused by extractive solutions A<sub>1</sub>, A<sub>2</sub>, B<sub>1</sub>, B<sub>2</sub> on rootlet growing

After the treatment with the extractive solutions the rootlet aspect is modified beside witness, become thicker and forked (Fig.2).

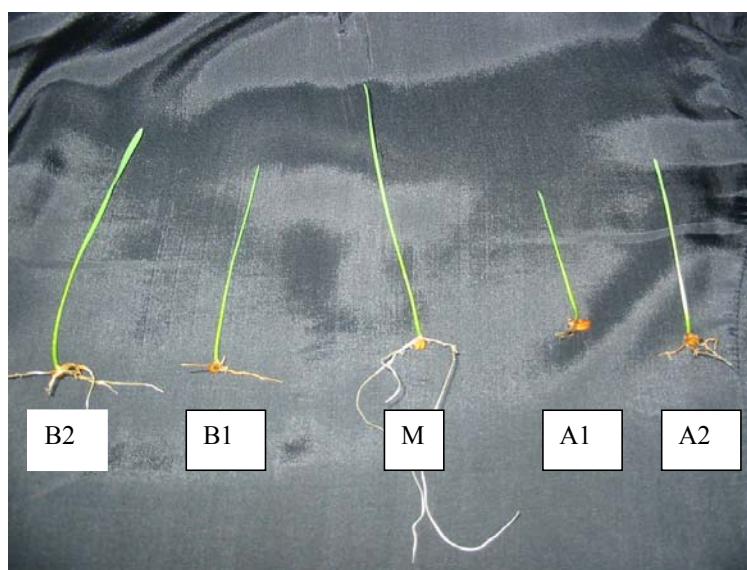
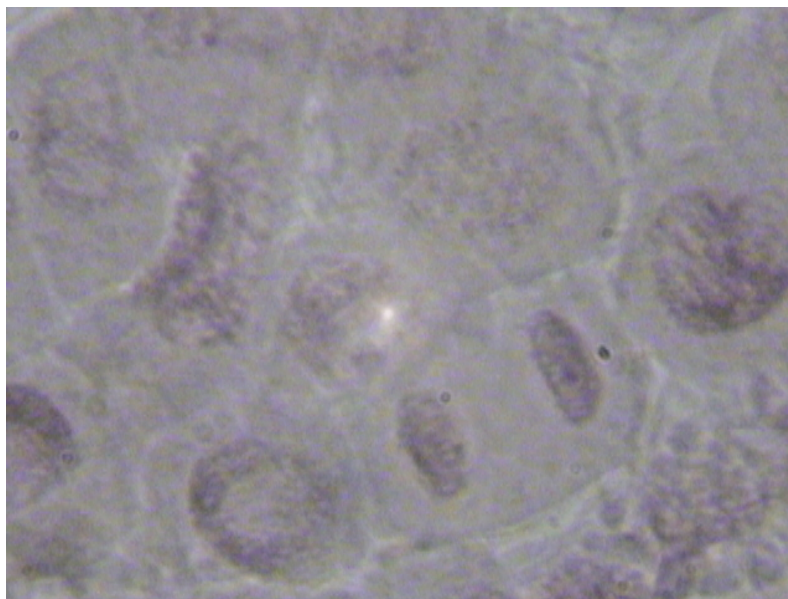


Fig. 2: The aspect of the rootlet at the finished of the elongation test

Concerning cellular division the extractive solutions had not cytotoxic effects. The only alteration observed is a heterocromatinisation of the genetic material round about nucleus membrane, in prophase (Fig. 3).



**Fig. 3:** The heterochromatic aspect of genetic material at the rootlet of *Triticum vulgare* grains treated with ethanolic flowers and young branches extracts

### Conclusions

The extractive solutions obtained by the flowers and young branches of *Elaeagnus angustifolia* L. inhibit the rootlet growing. This fact is determined by the presence of flavonoid compounds, well-known for their antiauxinic properties.

Absence of the alteration about mitosis film shows the absence of the cytostatic and cytotoxic activity for flowers and young branches of *Elaeagnus angustifolia* L. compounds.

### REFERENCES

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### CONTRIBUȚII LA STUDIUL FARMACOGNOSTIC AL SPECIEI *ELAEAGNUS ANGUSTIFOLIA* L. NOTA II: INFLUENȚA UNOR EXTRACTE DIN FLORI ȘI RAMURI TINERE ASUPRA GERMINAȚIEI, CREȘTERII RADICULARE ȘI FILMULUI MITOTIC LA GRAU

#### (Rezumat)

În vederea depistării unor eventuale efecte citotoxice sau citostatice ale speciei *Elaeagnus angustifolia* L., sălcioară (*Elaeagnaceae*) s-au experimentat pe cariopse de *Triticum vulgare* Mill., grâu (*Poaceae*), soluții extractive 10% preparate din flori și ramuri tinere prin macerare timp de 8 zile în alcool 10% (soluțiile A<sub>1</sub> și respectiv B<sub>1</sub>) și de 40% (soluțiile A<sub>2</sub> și respectiv B<sub>2</sub>). Determinările s-au efectuat față de un martor menținut în apă. S-au urmărit influența asupra germinării cariopselor și a elongației radiculare timp de 5 zile, precum și eventuale modificări ale filmului mitotic, la 6 și 24 de ore. S-a observat că germinarea cariopselor nu a fost inhibată de nici una din soluțiile extractive, iar creșterea radiculelor cariopselor germinate în aceste condiții a fost întârziată, ele având un aspect îngroșat și ramificat.

La finalul testului inhibiția alungirii radiculare a cariopselor germinate în apă produsă de soluțiile A<sub>1</sub> și B<sub>1</sub> (88,5%, respective 69,2%) este mai mare decât cea produsă de soluțiile A<sub>2</sub> și B<sub>2</sub> (80,7%, respective 65,3%). De asemenea inhibiția este mai intensă la extractele obținute din flori (A<sub>1</sub> – 88,5%, A<sub>2</sub> – 80,7%), decât la cele obținute din ramuri tinere (B<sub>1</sub> – 69,2% și B<sub>2</sub> – 65,3%). Aspectul radiculelor se modifică față de martor, devenind mai groase și ramificate, ca și în cazul precedent.

Asupra diviziunii celulare s-a constatat că soluțiile extractive cercetate nu au efect citotoxic. Singura modificare observată este heterocromatinizarea materialului genetic în jurul anvelopei nucleare, în profază.

Presupunem că inhibiția creșterii radiculare produsă de soluțiile extractive ar putea fi imprimată de prezența flavonelor, compuși recunoscuți în literatura de specialitate pentru proprietăți antiauxinice.