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ECOLOGICALLY-BIOCHEMICAL MUTUAL RELATIONS BETWEEN ECDYSTEROID PRODUCING PLANTS AND PHYTOPHAGANS [ON EXAMPLE *RHAPONTICUM CARTHAMOIDES* AND *SERRATULA CORONATA* (ASTERACEAE)]

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Abstract. Injury of medicinal plants of industrial value *Rhaponticum carthamoides* (Willd.) Iljin and *Serratula coronata* L. hexapods-phytophagens was researched in the conditions of 12 agropopulations of the European North. Degree of damageability of various members of plants depredators was estimated during 17-year-old life cycle estimated. Proceeding from the age of these plants, culture conditions, accumulation and composition of the basic acting materials – ecdysteroids (bioactive molecules), which are molting hormones of hexapods; estimated the injury, inflicted depredators.

It is ascertained, that there is no direct dependence between the general concentration of phytoecdysteroids and damageability of plants phytophagens. For vegetative propagules, irrespective of soil conditions and rates of development, and also despite rather low level of ecdysteroids, in one of 12 populations the mass lesion is not fixed with hexapods. For leaves organs there are short-term periods in life cycle when they do not possess potential of resistance to phytophagens. These periods are circumscribed: by a phase of transferring of sprouting seeds from a based (latent) age state to juvenile (a phase of plantlets), and a phase of necrosis of old leaves.

Other pattern of ecological mutual relations of generative propagules is laid with phytophagans. After the introduction of plants in seed reproduction period invasion and damage by their phytophagens is fixed. Frequency and gravity of a lesion correlated with the age in an ontogenesis and a development phase in a vegetation period. Elements with the highest general concentration ecdysteroids damaged in a coenosis. Activization of activity of phytophagans shows in a flowering-fructification phase, and is accompanied by damage of the reproductive organs concentrating ecdysteroids and lipids.

The torus of a raceme and seeds *R. carthamoides* (the content of ecdysteroids 0.8-1.2 % и 0.57-0.66 % accordingly), the upper and apical metamers of generative propagules *S. coronata* (the content of ecdysteroids 1.2-2.8%) were involved. Injury strengthened at transferring from the adult in an old generative and state subsenile age, resultining full or

particulate destruction of a seed yield. At *R. carthamoides* beetles - *Oxythyrea funesta, Potosia cuprea* ssp. metallica *(Cetoniinae)* from order coleopterous (Coleoptera: Scarabaeidae) were identified. Sometimes beetles *Trichius fasciatus* (Scarabaeidae: Trichiinae) were met. At plants *S. coronata* destructive insects were plant louses (Aphididae) from order Homoptera, and also not identified species dipterocecidium (Diptera: Cecidomyiidae [Itonididae]).

Thus superconcentration of ecdysteroids (2-5x10^{-5} M) did not scare and did not protect *R. carthamoides* and *S. coronata* from damages, and did not invoke irreciprocal changes in development of destructive insects though it is known, that their hormonal activity exhibits in very low concentrations – 10^{-8}-10^{-9} M. At the same time, at concentration at 25-40 time smaller, leaves organs were not damaged. Unaffected there are also the plants, which are behind in development and have not reached phases of blooming.

Degree of damageability of plants and magnitude of the injury inflicted by hexapods, correlated with biochemical changes in composition phytoecdysteroids, possessing various physiological activity. It is revealed, that during age changes in an ontogenesis and seasonal development at transit of a vegetation period to generative propagules share participation physiological active ecdysteroid *20-hydroxyecdysone* decreases and weakly and low-activity ecdysteroids *inokosteron*e and *ecdysone* cumulate.

Ecological environmental conditions and cultivation anthropogenic factors affect on concentrating in phytomass of low-activity ecdysteroid *ecdysone*. Environment microclimate, disposition of populations on topography elements, and also agrotechnical measures (intensity of alienation of phytomass, excess moisture etc.) are the factors promoting realisation of potential of a lesion.

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Oujda le 18 mars 2008

Accepted participation certificate

Dear Sir/Madame: **Nikolay Timofeev** sciens@leuzea.ru

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Contributions entitled:

1. Comparative results 4-years cultivation rhaponticum carthamoides (leuzea, maral root) in conditions of poland and the european north of russia.

2. Accumulation and variability of the contents ecdysteroids in medicinal raw material of leuzea (rhaponticum) carthamoides

3. Ecologically-biochemical interactions between ecdysteroid producing plants and phytophagans [on example rhaponticum carthamoides and serratula coronata (asteraceae)]

We are very pleased to inform you that the organising committee has accepted your work to be presented in the symposium as:

- **Poster contribution**

***IMPORTANT NOTE TO AUTHORS*:** Acceptance without payment of the fees will not be taken in consideration.

In the hope to see you soon among us, please accept our best greeting

Best regards.

Président du Comité d'Organisation
Prof. **A**hmed **Melhaoui**

SIPAM 3 et CIMB1
Secrétariat du Comité
Pr Ahmed MELHAOUI
29 30 Mai 2008
OUJDA MAROC

Programme

Mercredi 28 mai 2008 (après midi)	
15h00	Accueil des Participants et Inscription
17h00	Cérémonie d'ouverture

Jeudi 29 mai 2008		
8h-9h	Inscription (suite) et Affichage des posters	
9h00 - 9h45	**Session plénière** ***Modérateurs : Melhaoui A. & Bouali A.*** ***(Amphithéâtre Ibn Albannae)*** Conférence Inaugurale 1 **New approaches for Fourier transform mass spectrometry applied for biomolecules and complexes structural elucidation based on accurate mass measurements and ion activations.** Jean Claude Tabet. Paris, France	
9h45 10h15 : Pause café		
	1ère Session : Biologie, Pharmacologie, Toxicologie, Phytothérapie ***Modérateurs : Ziyyat A & Atta A.*** ***(Amphithéâtre Ibn Albannae)***	**1ère Session : Phytochimie, Molécules Bioactives, Valorisation** ***Modérateurs : Radi S. & Cheriti A.*** ***(Amphithéâtre Al Alami)***
10h15 - 10h45	Conférence 1 : **Les plantes antdiabetiques : ressources naturelles pour le traitement du diabète.** Bnouham M. Oujda, Maroc	Conférence 2 : **Isolement et identification de molécules bioactives à partir de plantes médicinales du Maroc : cas du *Thapsia transtagana* et *Thapsia villosa*.** Akssira M. Mohammedia, Maroc.
10h45	*Communications Orales* **O27- Evaluation biologique et chimique de composés insulino-stimulants à partir de plantes médicinales marocaines.** Nmila R., Rchid H., Gross R., Tijane M. El Jadida, Maroc.	*Communications Orales* **O1- Isolation and modifications of bioactive alkaloids from *Pancratium canariense*.** Cedrón JC., Estévez-Braun A., Ravelo ÁG. Tenerife, Spain.

Attia H., Ksouri R., Rabhi M. and Lachaâl M. Tunis, Tunisie.

A125 Antioxidant activity of *Nigella sativa* L. roots and shoots from Tunisia. Bourgou S., Ksouri R., Bellila A., Falleh H. and Marzouk B. Hammam-Lif, Tunisia.

A126 A comparison of antioxidant properties between artisan-made and factory-produced chocolate. Cervellati R., Greco E., Costa S., Guerra MC., Speroni E. Bologna, Italy.

A127 Investigation of antioxidant, acetylcholinestérase and antimicrobial activities of TOF and decoction extracts of *Cymbopogon schoenanthus* L. (Poaceae). Khadri A., Lino Rosa L., Luisa M.. Serralheiro M., Neffati M., Eduarda M.. Araújo M., Smiti S. Tunis, Tunisia.

A128 Capacité de piégeage des radicaux libres de l'extrait brut de *Crataegus oxyacantha*. Mohammedi Z. et Atik F. Tlemcen, Algérie.

A129 Etude de l'activité anti-inflammatoire de l'extrait méthanolique de *Corrigiola telephiifolia* Pourr. Lakmichi H., Bakhtaoui FZ., Loutfi K., Gadhi CA. Marrakech, Maroc.

A130 Sélection et caractérisation des substances naturelles aux propriétés immunomodulantes. El-Youbi El-Hamsas A., Ouahidi I. et Aarab L. Fès, Maroc.

A131 Effet myorelaxant et spasmolytique de Ain larneb (*Globularia alypum* l.) Sur le jéjunum du lapin. Doukali R., Chokri A. et Bencheikh R. Fès, Maroc.

A132 Relaxant effect of aqueous extract of *Cistus salvifolius* on rodent intestinal contractions. Oubenchiker K., Karim A., Mekhfi H., Bnouham M., Ziyyat A., Legssyer A., Melhaoui A., Atmani F., Bouali A. and Aziz M., Oujda, Maroc.

A133 Activite anti-diarrhéique de *Zygophyllum gaetulum*. Khabbal Y., Ait El Cadi M., Alaoui K., Faouzi MA., Bruno U., Mahraoui L., Cherrah Y. Rabat, Maroc.

A134 Accumulation and variability of the contents ecdysteroids in medicinal raw material of *Leuzea (rhaponticum) carthamoides.* Timofeev N.P. Russia.

A135 Ecologically-biochemical interactions between ecdysteroid producing plants and phytophagans [on example *Rhaponticum carthamoides* and *Serratula coronata* (asteraceae)]. Timofeev N.P. Russia.

A136 Implication de la mélatonine seule ou combinée avec l'imipramine dans la régulation du niveau de dépression chez le rat. Ouichou A., Benabid N., Ouakki S., Nasri I., Alaoui N. et Mesfioui A. Kénitra, Maroc.

A137 Action de la mélatonine en absence ou en présence du diazepam sur le niveau d'anxiété chez le rat. Mesfioui A., Ouakki S., Nasri I., Benabid N., Alaoui N. et A. Ouichou. Kénitra, Maroc.

A138 L'effet de *Ficus-carica* et *Zea mays* sur les calculs urinaires majoritaire

Jauregui J. and Alvarez Cansino L. Taza, Maroc.

A179 Impact des conditions hydro halomorphes sur *Zygophylum album* dans le sud–est Algérien : cas de la cuvette de Ouargla. Daddi Bouhoun M., Brinis L., Ould El Hadj MD. et Saker ML. Ouargla, Algérie.

A180 Phylogéographie de l'ADN chloroplastique chez l'arganier étude comparative avec les populations reliques. El Mousadik A. & Petit R., Agadir, Maroc.

A181 Molécules actives de T*richoderma harzianum* et R*hizobium leguminosarum.* Essalmani H. Université Tanger, Maroc.

A182 Culture of aromatic and medicinal plants and the europgap certification. Bouras M., ElbahrI Y. and Lamarti A. Tetouan, Morocco.

A183 Multiplication *in vitro* et marquage moléculaire pour la conservation de l'arganier. Jabbar Y., Majourhat K., Hafidi A et Martinez-Gomez P**.** Marrakech, Maroc.

A184 Contribución à l'étude de la capacité organogène *in vitro* de safran (C*rocus sativus* L.). Rahmoun A., Lage M. and Lamarti A. Tetouan, Maroc.

A185 Comparative results 4-years cultivation *Rhaponticum carthamoides* (leuzea, maral root) in conditions of Poland and the European north of Russia. Timofeev N.P. Koryazhma, Russia.

A186 Salt effect on fatty acid composition of coriander (C*oriandrum sativum* l.) Leaves. Neffati M. and Marzouk B. Hammam-Lif, Tunisia.

A187 Effets Du Calibre Des Noyaux Et De Leur Prétraitement Sur La Germination De L'arganier Des Béni-Snassen « *Argania spinosa* (L.) SKEELS ». Berrichi A., Reda Tazi M., Fouzi K., Bekkouch I., Boukroute A. Oujda, Maroc.

A188 La multiplication végétative par bouturage de la verveine et de la marjolaine. Boukroute A, Berrichi A, Reda Tazi M. Oujda, Maroc.

A 189 Tissues cultures of Matricaria recutita l. and chimiotaxonomy. Errehouni S. and Lamarti A. Tetouan, Morocco.

A190 Le codium fragil : Identification, caractérisation de la paroi et analyse des métaux lourds. Ben Gueddour Y., EL Hassouni H., EL Hani S., Abdellaoui D., Gmira N. Ben Gueddour R. Kénitra, Maroc.

A191 Copper ions biosorption properties of two desert plants: *Anabasis aretioides* and *Acacia raddiana.* Talhi MF., Benchiekh W., Cheriti A,. Belboukhari N. & Roussel C. Bechar, Algeria.

A192 Propriétés antioxydantes des composés phénoliques des feuilles de *Pistacia lentiscus.* Nabila Benhammou, Fawzia Atik Bekkara, Tlemcen, Algérie.

A193 Médicaments à base de plantes: vers une maîtrise de leur qualité et législation au Maroc. Yahyaoui R. Et Bouchentouf D. Syndicat des pharmaciens d'officine d'Oujda (SRPOO), Oujda - Maroc.