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145.

BIOLOGICAL ACTIVITY OF *Plantago major* IN RATS. MICROSCOPICAL STUDY

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Infusions of *Plantago major* (Pm) are used in folk medicine to treat gastric diseases. Thisstudy wasperformed to evaluate the gastric cytoprotective activity of the 10% infusion and methanolic extract obtained from the Pm in rats. Methanolic extract and the 10% infusion were tested in Wistar rats under standardized conditions and a strict protocol (method of Robert *et al*., 1979). The substance used to produce injury was absolute ethanol. The removed stomachs were used for the microscopical study. The phytochemical analysis of Pm revealed the presence of possible substances responsible for the gastric cytoprotective action. After several chromatographic purifications, oleanolic acid, 5,7,3',4'-tetrahydroxy-6methoxyflavone and 5,4'-dihidroxy-6,7,8,3'- tetramethoxyflavone were isolated. A very important blood vessels and cells structure disorganization was found by electronic microscopy in the experimental injury group. Bothmethanolicextractasinfusion evidenced a gastric mucose unaffected in structure. The electronic microscopy study shows the gastric cytoprotective activity of *Plantago major* against the absolute ethanol injury and may be due to the presence of different compounds described in the phytochemical profile.

146.

ASSESSMENT OF TOXIC ELEMENTS IN AMARANTH SEEDS

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In the recent years, amaranth (Amaranthaceae) has been proposed as new food due to its nutritional properties (i.e. aminoacid, protein, lipidic and carbohydrates contents). However, the determination of toxic elements has been less studied in amaranth seeds. For this reason, the concentration of As, Cr and Pb was determined in three species of amaranth seeds: *A. hypochondriacus, A. cruentus* and *A. dubius*, which were harvested in Argentina (provinces of La Pampa and San Luis). The determinations were carried out by inductively coupled plasma optical emission spectroscopy (ICP-OES). Evaluation of accuracy was carried out by standard addition method. The results show that, for the three species, Cr and As are present in low concentration. However, the concentration of Pb was high, at least two times the maximum allowed value (10 μg g^{-1}) by the World Health Organization (WHO). As a conclusion, the high concentration of Pb present in amaranth seeds from Argentina, indicates that Pb determination should be considered in these amaranth species to avoid undesirable consequences for the human health in the population that consumes these seeds.

147.

CHEMOMETRIC CLASSIFICATION OF AMARANTH BY USING FATTY ACID COMPOSITION

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In this work, the composition of fatty acids was analyzed in order to obtain a chemometric model for the classification of amaranth varieties seeds: *A. cruentus* var. *candil (Acc), A. hypochondriacus* var. *dorado (Ahd), A. hypochondriacus line H17a (AH17a) and A. cruentus line G6/17a (AcG6/17a).* Chemometric model was performed by linear discriminant analysis (LDA). The results shows that the discriminant model was able to classify correctly all the studied varieties, with 100% of correct classification in all cases, for training and prediction test set. On the other hand, the discriminant functions plot (function 1 *vs* function 2) showed similarities between *A. cruentus* var. *candil* and *A. cruentus line G6/17a*, while *A. hypochondriacus* var. *dorado* and *A. hypochondriacus line H17a* showed the most important differences with the others ones. As conclusion, LDA in conjunction to fatty acid composition, were able to distinguish between varieties of amaranth, which can be useful as a non expensive method to classify amaranth seeds.

148.

MULTIVARIATE ANALYSIS OF MAJOR, MINOR AND TOXIC ELEMENTS IN *Sechium edule*

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Multivariate data analysis was performed on *Sechium edule*, using as variables the concentration of the follow elements: Ag, Al, As, Ba, Bi, Ca, Cd, Co, Cr, Cu, Fe, Ga, Hg, K, La, Mg, Mn, Mo, Na, Nb, Ni, P, Pb, S, Sb, Se, Sn, Sr, Ta, Te, Ti, Tl, V, Zn and Zr, analyzed by inductively coupled plasma optical emission spectrometry (ICP-OES) on a total of 15 replicates *Sechium* fruits, including whole fruit (Fr), pulp (Pu) and seed (Se). Principal Components Analysis (PCA) was carried out, in order to find an optimal model of classification and find the most relevant variables for the analysis of the fruit (which were the concentration of Ca, Cd, Fe, Mg, P y S); after that, the same variables were used for Clusters Analysis (CA) and Linear Discriminant Analysis (LDA). Thus, it was possible to make a proper classification of the three components of the fruit: Fr, Pu and Se by the three multivariate methods. As conclusion, multivariate methods were able to classify different parts of *Sechium edule.*