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13.

NATURAL ANTIOXIDANTS FROM BEE PRODUCTS

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The aim of this study was to determine the antioxidant capacity of propolis from two phytogeographical regions of Argentina: Santiago del Estero (SE) and Chaco (CHA). Phenolic compounds and flavonoid content were determined in Gallic acid equivalent (GAE/ml) and quercetin equivalent (QE), respectively. Different *in vitro* assays were used to determine the free radical scavenging activity and inhibitory activity on β -carotene bleaching (linoleic acid/ β -carotene/H₂O₂). The scavenging concentration of 50% of free radical (SC₅₀) was calculated. All propolis extracts showed free radical scavenging activity with SC₅₀ values lower than 10 and 1 μ g GAE/ml for SE propolis and CHA propolis, respectively. Also, the propolis extract showed scavenging capacity on HO $\cdot$ with SC₅₀ values of 100 μ g GAE/ml. It also showed protective activity against lipid oxidation. In view of the results obtained, the propolis from SE and CHA could be used as functional foods against oxidative stress oxidative and as food preservatives.

14.

ACUTE TOXICITY AND GENOTOXICITY ASSAYS OF PHYTOTHERAPICS FROM *FABIANA PUNENSIS*

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The inhabitants of the Argentine Puna use many of the shrubs that grow in the region to relieve the oxidative stress generated by the altitude, or even as anti-inflammatory and antimicrobial agents for the treatment of skin infections. Previous studies showed that extracts of *F. punensis* exerted antimicrobial activity against human pathogenic bacteria and yeasts and also had antioxidant and anti-inflammatory activity. The aim of this study was to evaluate the toxicity of decoction and maceration of *F. punensis* to ensure safe use. Maceration and decoction were standardized based on content of phenolic compounds, flavonoids and antioxidant and antimicrobial activity. Toxicity was determined using the acute toxicity test of *Artemia salina* and genotoxicity tests with two strains of *Salmonella typhimurium* TA98 and TA100 with and without metabolic activation. Mutagens were used as positive control. The extracts showed no acute toxicity. None of the extracts showed toxicity or genotoxicity on TA98 and TA100 strains until 1000 μ g GAE / plate in the presence and absence of exogenous metabolic activation. Within the ethnopharmacological context, our results justify the popular use of extracts of *F. punensis* as a natural product without genotoxic effects.

15.

ACTIVITY OF HYDROALCOHOLIC EXTRACTS OF *NARDOPHYLLUM ARMATUM* ON MICROORGANISMS OF INTEREST IN PLANT FOOD

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Nardophyllum armatum (Wedd.) Reiche is widely distributed in the Argentine Puna. Previous studies demonstrated that aqueous and alcoholic extracts of this species, collected at 4200 and 3650 masl, have antioxidant and antibacterial properties against human pathogenic bacteria. The aim of this study was to evaluate the antimicrobial capacity of *N. armatum* extracts on pathogenic microorganisms of interest in agriculture. The antimicrobial activity of extracts was evaluated using the macrodilution method in agar on *Erwinia carotovora*, *Agrobacterium tumefaciens*, *Xanthomonas campestris*, *Pseudomonas syringae*, *Geotricum candidum* and *Penicillium digitatum*. The extracts were standardized on the basis of their phenolic compounds content (1131 and 2246 μ g GAE/ml for the species collected in Jujuy and Catamarca, respectively). Both extracts of *N. armatum* were effective in inhibiting the growth of *P. digitatum* and *G. candidum*. The MIC values of all pathogenic bacteria were around 400 μ g GAE/ml. The results showed the potential use of extracts from *N. armatum* as a natural strategy, unconventional and environmentally acceptable, for crop protection against diseases caused by pathogenic microorganisms.

16.

ACTIVITY OF CHUQUIRAGA ERINACEA EXTRACTS AGAINST PLANT PATHOGENIC BACTERIA

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The aim of this study was to determine the total phenolic content and antibacterial activity against plant pathogenic bacteria in ethanol extracts of the aerial parts of *C. erinacea*. The phenolic content was determined by the method of Singleton *et al.* (1999). The antibacterial activity was determined qualitatively by bioautographic assays. By agar and liquid dilution tests, the MIC (minimum inhibitory concentration) and MBC (minimum bactericidal concentration) were determined according to the recommendations of Clinical Laboratory Standard Institute. The pathogenic strains assayed were *Erwinia carotovora* pvar carotovora, *Pseudomonas syringae* pvar syringae and *Xanthomonas campestris* pvar vesicatori. At least two phenolic compounds had antibacterial activity against *P. syringae*. The order of sensitivity of the three strains with alcoholic extract was as follows: *E. carotovora* > *P. syringae* > *X. campestris*. MIC values were 500-250 μ g/ml, whereas MBC values were 200-400 mg/ml. These results constitute the first report of the effect of extracts of aerial parts of *C. erinacea* against plant pathogens. This plant would be a source of antibacterial compounds that could be used as a natural tool for the control of agricultural pests.