



Valorization of aromatic native species from highlands of Northwestern Argentina

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Latin America concentrates much of the planet's biodiversity. Native species of medicinal and aromatic plants (MAP) of semi-arid and arid regions of Argentina NW grow in extreme agro-climatic conditions (different soils and heights, wide temperature range, aridity and high UV radiation) that modulate the production of active principles. This diversity promotes the richness of MAP, with ethnobotanical tradition, of families such as Asteraceae, Lamiaceae, Verbenaceae, Apiaceae, Anacardiaceae. For natural resource to be preserved, it should be valued. The contribution of our research group covers some different actions: 1) Population studies of aromatic and medicinal species in the region through the characterization of their essential oils (EOs). For example, the chemical intraspecific variability was determined in *Aloysia citriodora*, *Schinus areira*, *Clinopodium gilliessi*, *Aloysia polystachya*, and *Acantholippia salsoloides*. 2) Isolation, purification, and structural determination of secondary metabolites: new compounds from *Mutisia friesiana* Asteraceae. Eremophilanes type sesquiterpenes in the essential oil of *Senecio punae*. 3) Obtaining of volatile and non-volatile active principles contained in the MAP using FSc. Microencapsulation of volatile and nonvolatile secondary metabolites. 4) Characterization of the bioactivity of extracts and secondary metabolites (M2) isolated from PAM: Antimicrobial activity, antioxidant activity against free radicals (superoxide, nitric oxide), *in vitro* inhibition of acetylcholinesterase and butyrylcolinesterase enzymes, *in vitro* inhibition of alpha-glucosidase, and EOs activity for controlling parasites were investigated. 5) Molecular modeling of experimental AAOx behavior of hydrocarbon and oxygenated monoterpenes from EO and pure polyphenolic compounds. 6) Incorporation of active metabolites in food formulations. 7) Transfer projects to indigenous communities. Some cases: Population Study of molle. The results proved the chemical difference between EOs *Schinus molle* L. and *S. areira* L, taxonomically very close, and represented a significant contribution to the development of STANDARD IRAM 18608-1 and STANDARD IRAM 18608-2 and subsequent STANDARD ISO 16385. Antimicrobial activity of EO from *Schinus areira*. The inhibition of methicillin-resistant *Staphylococcus aureus* by essential oils isolated from leaves and fruits of *Schinus areira* depending on their chemical compositions was studied. The results showed that the limonene-rich oil extracted from the leaves and fruits have potent antibacterial effect on *S. aureus* ATCC 25923, while the α -phellandrene-rich fruit oil having a lower content of limonene showed the lowest antibacterial efficacy. All results point out the potential use of the *S. areira* oils as antimicrobial agents to be used, at least against Staphylococcal infections

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