



Tropentag, October 9-11, 2007, Witzenhausen

“Utilisation of diversity in land use systems:
Sustainable and organic approaches to meet human needs”

Evaluation of *Eryngium foetidum* L. Processing by Solar Dryers

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Abstract

Two solar drying methods (direct cabinet solar dryer and indirect cabinet solar dryer) were tested under tropical conditions for drying sachaculantro (*Eryngium foetidum* L.) in the Peruvian Amazon city Pucallpa. The drying in electric oven was used as reference. *E. foetidum* from Apiaceae family is a perennial or biennial herb native to tropical America. The herb, especially leaves, is used extensively in the Latin America and in Asia mainly as a seasoning in the preparation of a range of foods. Sachaculantro is also widely used in herbal medicines due to its antiinflammatory activity. All around the world culantro is mainly used as fresh vegetable and there is lack of any postharvest processing method especially in the Peruvian Amazon. Thus, the main objective of the work was to investigate the most acceptable drying method in dependence on the final content of aromatic substances and on the applicability of this technology under local conditions. Drying parameters of solar dryers were observed; ambient air temperature and relative air humidity, drying temperature and relative air humidity in the chamber of solar dryers as well as the solar radiation were measured during the experiment run. Dried samples as well as fresh leaves (to enable evaluation of changes on essences caused by drying) were hydrodistilled to obtain essential oils. Oil content in samples was measured and only small losses were recorded in dried samples. Isolated oils were analysed using GC-FID and GC-MS analyses, its components were detected, identified, and relative proportion of compounds was compared. The most important odorants in *E. foetidum* leaves are (E)-2-dodecenal, 2,4,5-trimethylbenzaldehyde, n-dodecanal and (E)-2-tetradecenal. No important distinctions between concentrations of these odour active compounds in essential oil samples were recorded. Demonstrably negative effect of drying was observed on n-dodecanal only. Both direct drying and indirect drying method were evaluated as suitable for drying *Eryngium foetidum* leaves.

Keywords: *Eryngium foetidum*, essential oil, Peruvian Amazon, Sachaculantro, solar drying