

Phenol profile and antioxidant capacity of mescal aged in oak wood barrels

José Antonio Ávila-Reyes ^{a,*}, Norma Almaraz-Abarca ^a, Eli Amanda Delgado-Alvarado ^a,
Laura Silvia González-Valdez ^a, Gustavo Valencia del Toro ^b, Enrique Durán Páramo ^b
^a Centro Interdisciplinario de Investigación para el Desarrollo Integral Regional Unidad Durango, Instituto Politécnico Nacional (CIIDIR-IPN-Durango),
Becarios COFAA,
Sigma 119, Fraccionamiento 20 de Noviembre II, Durango, Dgo. 34220, Mexico
^b Unidad Profesional Interdisciplinaria de Biotecnología, Instituto Politécnico Nacional Avenida Acueducto s/n, Colonia Ticomán, DF 07340, Mexico

In Durango, Mexico, mescal is elaborated from wild plants of *Agave durangensis* Gentry as a local industry, which with just an industrialization process begins. Contrary to other alcoholic beverages, studies focused to provide an overall profile of quality of mescal in terms of the antioxidant properties related to the phenol composition have not been realized. In this study the antioxidant activities of mescal manufactured from *A. durangensis* at different times of ageing were determined by free radical scavenging (2,2-diphenyl-1-picrylhydrazyl; DPPH_•) method. Activities were compared to phenol contents and compositions. Results suggested that mescals at every time of ageing showed high antioxidant activities as radical scavengers but those activities were not clearly associated to the total phenol contents. Results also suggested that the particular phenol composition may be more important for determining the antioxidant activity than any specific phenolic concentration. The phenol profiles, assessed by HPLC/DAD, were typical for each time of ageing, being formed by two major phenolic acids at 75 days and reaching 10 or 11 different phenolic compounds, including phenolic acids and flavonoids, at 206 days of ageing. Phenol profiles and phenol contents were so specific at every time of ageing that could be considered as worthy quality markers for this alcoholic beverage.

Keywords:

Mescal
Ageing in oak barrels
Phenol profiles
Antiradical capacity