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Phenols in the Piper genus: Biological activity and significance

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Scientists have used natural products as source of new medicines for healthcare and treatment of many chronic diseases, such as Alzheimer, arthritis, hepatitis, diabetes, tuberculosis, immunosuppression and cancer. Today many developing countries are still using traditional medicine due to their low cost and limited access to pharmaceutical drugs. Ethnobotanical knowledge has been traditionally the basis for the discovery of new active principles. For example, the natural compounds vinblastin, podophyllotoxine, taxoids, camptothecin, embelin, among many others have brought a new light to cancer treatment. However, the complex compositions and chemical structures have made difficult their isolation, structure elucidation and new synthetic pathways to obtain higher quantities of compound. In fact, the interest on simple phenolic structures, have been renewed because of their antioxidant, anti-inflammatory, anti-estrogenic, anti-mutagenic and anti-carcinogenic effects both in vitro and in vivo. These phenolics are present in various plant families; however, the Piperaceae family is one of the most representatives. Phytochemical reviews on the genus Piper have shown that it contains high amount of phenolic compounds such as flavonoids, lignans and simple phenols that we have recently been found to be similar to embelin structure. To our knowledge, only a few investigations in simple phenols have been carried out on the Piper genus. In Colombia many species are traditionally used by local healers and it is necessary to link chemical compositions to biological effects. For example, the study of *P. imperiale* showed a considerable content of phenols and the flower extract has been found to be extremely active against *Mycobacterium tuberculosis* H37Rv. Our study aims to investigate the phenol content in the Colombian Piper species, "simple structures" (it may not be always the case that the more complex structure is the more active) and the relation of the phenolic composition to antioxidant, antibacterial and cytotoxic activities.

Biography

Diego R. Muñoz obtained his B.Sc. in 2004 and M.Sc. in Chemistry in 2006 from Science Faculty of National University of Colombia. During his M.Sc. attended some courses, such as Validation of the pharmacological activity of natural products, Bioactive natural products from therapeutic significance and Development and validation of analytical methods applied to phytotherapy products. In 2011 gets a scholarship from the Administrative Department of Science, Technology and Innovation from Colombia to do his Ph.D in the National University of Colombia and at present is the head of Chemistry Program at University of Applied and Environmental Sciences U.D.C.A.

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