

Neuropharmacological effects of triterpenoids

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Abstract

Triterpenes comprise one of the most interesting groups of natural products due to their diverse pharmacological activities. Triterpenes are ubiquitously present in variety of ethnomedicinal plants. The term 'triterpene' represents naturally occurring terpenes, whereas the broader expression 'triterpenoid' includes secondary metabolites. It has been estimated that 80 distinct types of both the structure and the chemical characteristics of triterpenes have been identified till today. Many such compounds can either be used directly as active compounds or modified to increase their selectivity and potency. The present article provides updates on wide range of biological activities of tetracyclic triterpenes and pentacyclic triterpenoids such as immunomodulatory, anticancer, anti-inflammatory, anti-anxiety, antidepressant, memory enhancer, antinociceptive, neuroprotective and other CNS actions. Several structural groups of triterpenes have demonstrated specificity against transcriptional factors which can be promising candidates for treating inflammation, cancer, and immune diseases.

Keywords: Ethnomedicine; Molecular signaling; Neuropharmacology; Pentacyclic triterpenoids; Tetracyclic triterpenes

Introduction

Triterpenoids are widely distributed in the plant kingdom. They are produced in plant as secondary metabolites and have varied biological activities (Hanson, 2003). The terms triterpenes and triterpenoids are often used to describe the same C₃₀-terpene compound. However, they need to be differentiated based upon their occurrence, biosynthesis and biotransformation products. The term 'triterpene' is used to describe naturally occurring terpenes whereas; the broader expression 'triterpenoid' includes natural degradation products (Eggerdsofer, 2005). Triterpenes are originally synthesized by plants as metabolites, and are abundantly present in the plant kingdom in the form of free acids or aglycones (Chappell, 1995;