

# **Drug Discovery Strategy for Anticancer and Cancer Chemopreventive Agents as a Multidisciplinary Approach**

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Drug discovery has been a major concern of mankind since prehistoric times drugs of natural product origin are particularly emphasized recently for the treatment of human ailments. Plants are the most abundant resource for the discovery of biologically active natural constituents, which can be important lead compounds for the development of structurally modified derivatives with reduced toxicity and enhanced biological activity. In order to discover new biologically active compounds from natural products, multidisciplinary approach is a useful strategy by collaboration of different scientific area as following : 1) rational plant selection and provision by botanists/collectors 2) extraction, isolation and identification of compounds by pharmacognosist 3) in vitro bioassay based on activity-guided fractionation by biochemists/biologists 4) *in vivo* test to evaluate the efficacy by biochemists/biologists 5) semi-synthesis or total synthesis by chemists for obtaining a large quantity or modify the structure for enhanced activity.

As a part of our ongoing effort to find new anticancer agents from natural sources budmunchiamine alkaloids were discovered from *Albizia amara* using a hplc-based method combined with DNA-cellulose column chromatography. Antimitotic constituents from *Hyplis verticillata*, *Steganotaenia araliacea*, and *Bursera permollis* were isolated by means of bioassay-guided fractionation methods using cultured astrocytoma (ASK) cells, which demonstrated a potent tubulin-mediated cytotoxicity against a panel of cancer cell lines Bioassay-guided fractionation of *Mundulea serica* extract led to the isolation of rotenoids and chalcones, which inhibit phorbol ester-induced ornithine decarboxylase (ODC) activity in cell culture system Rotenoids, which mediate the potent cancer chemopreventive activity through transcriptional regulation of ODC, inhibited the chemically induced preneoplastic lesions in mammary organ culture and papillomas in the two stage mouse skin tumorigenesis model

In this presentation, an overview of the drug discovery strategy from natural resource will be given, as well as recent results related to anticancer or cancer chemopreventive agents.