

## Medicinal Plants in Asia

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### Abstract:

Today, more than one-third of approved drugs in the global pharmaceutical markets are derived from natural products. Since the discovery of the DNA double helix by Watson and Crick in 1953, there has been an explosive convergence of molecular biology, drug discovery, biotechnology and traditional herbal medicine. The antineoplastic drug paclitaxel and its derivatives serve to illustrate this disruptive development within the global healthcare industry. In 2016, paclitaxel (Taxol™) and its derivative (Abraxane™) generated USD 1.7 billion a year in revenue for the Swedish drug company Oasmia Pharmaceutical AB. Paclitaxel occurs naturally in coniferous species belonging to the arboreal Yew genus and exerts its pharmacological effects against a range of cancers including gynaecological, pulmonary, gastric and pancreatic tumours by interfering with microtubule cytoskeletal dynamics within neoplastic cells. In a Phase III clinical trial, when compared with the chemotherapeutic combination drug regimen of cyclophosphamide, methotrexate, fluorouracil and prednisone, the use of paclitaxel monotherapy was able to increase 2-year survival rate in female patients with metastatic breast cancer by nearly 2-fold, from 20% to 39% (N=209). In terms of the scope for translational research and development, there are an estimated 500,000 plant species in the world, of which the Thai and Chinese Materia Medica have approximately 1,800 and 7,000 species listed, respectively. These natural resources proffer immense economic value and profound healthcare proposition that await global collective harnessing, for the common good.

**Keywords:** herbs, biodiversity-biomedical convergence, healthcare industry, translational medicine, paclitaxel