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Malaysian herbs as potential natural resources of anticancer drugs: From folklore to discovery

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Abstract

Cancer is a complex disease and ranks as a leading cause of death globally. Despite many advances made in cancer therapeutics, adverse side effects and treatment resistance remain a great problem. In that sense, there are increasing demands to discover new anticancer agents from naturally-derived compounds. Medicinal plants represent a valuable source of new drugs with promising efficacy and safety. They produce various secondary metabolites, which exhibit unique structures and a pharmacological spectrum of activity, including antitumour activity. *Clinacanthus nutans*, *Strobilanthes crispus*, *Ficus deltoidea*, *Curcuma longa*, *Centella asiatica* and *Piper betle* are among the plants species commonly used to cure cancer in traditional medicine formulae in Malaysia. The present review aims to highlight the anticancer properties of the listed Malaysian herbs with a focus on their bioactive compounds and the mode of action. Overall, many studies have disclosed the presence of active metabolites in these plants, including phenols, alkaloids, flavonoids, terpenoids, saponin, curcumin and Asiatic acid. They possess significant cytotoxic or antiproliferative effects primarily via the induction of apoptosis, elevation of antioxidant activity and inhibition of cancer activating enzymes. Hence, further investigation into their clinical therapeutic potential may be noteworthy. Additionally, this review article also provides the reader with information concerning the conventional anticancer drugs and their limitations, recent developments and milestones achieved in plant-derived cancer therapeutics as well as different approaches to enhance the production of these anticancer molecules. © 2022, University of Malaya. All rights reserved.

Author Keywords

anticancer; antiproliferative; cytotoxicity; Malaysia; medicinal plants; phytochemical compounds

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