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Ganoderma lucidum: A rational pharmacological approach to surmount cancer

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Abstract

Ethnopharmacological relevance: Ganoderma lucidum (G. lucidum) has been broadly used for health endorsement as well as longevity for over 2000 years in Asian countries. It is an example of an ancient remedy and known as immortality mushroom. It has been employed as a health promoting agent owing to its broad pharmacological and therapeutical approaches. It has been confirmed that G. lucidum exhibits significant potency to prevent and treat different types of cancers such as breast, prostate, colon, lung and cervical.

Aim of the study: To explore anticancer effects of various pharmacologically active compounds obtained from G. lucidum and their possible mechanism of action.

Materials and methods: A literature search was conducted using PubMed, Goggle Scholar, Saudi Digital Library and Cochrane Library until October 11, 2019. Search was made by using keywords such as anticancer evidence, mechanism of action, pharmacology, antioxidant, toxicity, chemotherapy, triterpenoids and polysaccharides of G. lucidum.

Results: Various chemical compounds from G. lucidum exhibit anticancer properties mainly through diverse mechanism such as cytotoxic properties, host immunomodulators, metabolizing enzymes induction, prohibit the expression of urokinase plasminogen activator (uPA) and urokinase plasminogen activator receptor (uPAR) in cancer cells. Among the various compounds of G. lucidum triterpenoids and polysaccharides are under the major consideration of studies due to their several evidence of preclinical and clinical studies against cancer.

Conclusion: Natural alternatives associated with mild side effects are the basic human need of present therapy to eradicate the new emerging disorders. This review is an attempt to compile pharmacologically active compounds of G. lucidum those exhibit anti cancer effects either alone or along with chemotherapy and anticancer mechanisms against various cancer cells, clinical trials, chemotherapy induced toxicity challenges with limitations. It acts as a possible substitute to combat cancer growth with advance and conventional combination therapies as natural alternatives.

Keywords: Cancer; Pharmacology; Polysaccharides; Toxicity; Triterpenoids.

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