Anti-cancer properties of triterpenoids isolated from Ganoderma lucidum - a review.

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Abstract

**INTRODUCTION**: Triterpenoids isolated from Ganoderma lucidum are a class of naturally occurring compounds and structurally highly oxidized lanostanes. Accumulated data show that triterpenoids exhibit a broad spectrum of anti-cancer properties, including anti-proliferative, anti-metastatic and anti-angiogenic activities. A systematic summary and knowledge of future prospects are necessary to facilitate further studies on this species.

**AREAS COVERED**: This review aims to summarize and analyze the current knowledge on the anti-cancer properties and mechanisms of G. lucidum triterpenoids (GLTs) and discuss the future prospects of the application of GLTs in cancer treatment.

**EXPERT OPINION**: Extensive research over the last 10 years has provided evidence of the anti-cancer activities of GLTs in different stages of carcinogenesis. These activities include cell cycle arrest, induction of apoptosis and autophagy, and suppression of metastasis and angiogenesis. However, the exact molecular mechanisms involved in these processes remain unclear. Androgen receptor, nuclear factor-kappa B, activator protein-1, p53 and 14-3-3 are reportedly involved in the anti-cancer properties of GLTs. Animal models further shed light on the development of GLTs as anti-cancer agents. However, more research and clinical trials are necessary to exploit these compounds.