Tentative Outline

Anti-Cancer Agents in Medicinal Chemistry

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TITLE: Antineoplastic Alkaloids: A medical approach from a chemical vision

Aims & Scope:
Our knowledge respect to the compounds with antineoplastic properties comes from the fact of which these active ingredients have been in the past highly non-specific, variable cytotoxicity and low bioavailability in the living organism. Thus, compounds of different chemical structure have been studied in different cancer cell lines with a powerful antineoplastic activity, but with undesirable side effects as irritation and stomach inflammation, gastroesophageal reflux, blood imbalances and psychological effects as anxiety or depression.

In this sense, at present the commercial compounds with anticarcinogenic properties have demonstrated not to be sufficiently selective, highly cytotoxic and with variable shelf life in the organism, principally for its low lipophilicity. The alkaloids originated either from natural sources or synthetically, have been reported, in varied cases, as highly selective in the cancer cell growth inhibition, photosensibilizators applied in treatment of photodynamic therapy, and these pharmacological agents generate very stable organic/inorganic salts that increase its bioavailability in the living organism.

Even more, the use of supramolecular system that can encapsulate these alkaloids, or the synthetic modification of the same ones, make to increase the shelf life and the administration of these antineoplastic agents in the organism, facilitating the probability of crossing the blood-brain barrier (BBB) and to pursue its pharmacological action.

Our scope is to compile the diverse antineoplastic alkaloids reports from the isolation or semisynthetic modification to the medical administration for conventional methods by using nanotechnology to support and to extend the therapeutic action in the organism. Studies respect to diverse carcinogenic cell strain, photodynamic applications and theoretical studies of structure-activity relationship (SAR) are also a fundamental part of the research and search of anticarcinogenic agents as medical tool in the applied chemotherapy.

Key words: Antineoplastic; alkaloids; cytotoxicity; blood-brain barrier; nanotechnology; phototherapy; drug delivery.

Subtopics:
- Studies of isolation, chemical characterization of new antineoplastic alkaloids
- Conventional synthesis of active alkaloid patterns
- Studies of structure-activity relationship and computational design of alkaloids with anticarcinogen properties
- Studies of photodynamic application and UV radiation for treatment cancer using alkaloids
- Drug delivery studies with antineoplastic alkaloids and supramolecular systems
Schedule:
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