WATER SOLUBLE NOSCAPINES WITH ANTI-PROLIFERATIVE ACTIVITY

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Introduction: Noscapine is a widely used antitussive agent and presently under investigation in phase II clinical trials for multiple myeloma treatment. It is a non-sedative, naturally occurring alkaloid obtained from opium poppy and acts as a microtubule modulating agent. Noscapine inhibits various neoplasms such as leukemia, lymphoma, glioma, ovarian, breast, lung and colon. Therefore, improving the therapeutic efficacy and pharmacological properties of Noscapine is highly desirable. Lack of Noscapine solubility has hindered the drug development process for a long time. First and second generation Noscapine analogs have been reported, but solubility issues are a major factor for in vivo experiments.

Technology: A team of researchers at Georgia State University have designed and synthesized “kinder and gentler” Noscapine analogs. These are microtubule targeting agents with enhanced pharmacokinetic properties such as potency, aqueous solubility and bioavailability. These Noscapinoids are relatively non-toxic and show several-fold improvement over Noscapine, in in vitro and in vivo studies.

Applications:
- Due to high potency and selectivity these Noscapinoids can be exploited for therapeutic usage individually or in combination with the current toxic anti-microtubule drugs
- Prophylactic and/or therapeutic use for proliferative disorders (various cancers), hypoxic ischemia in stroke patients, polycystic ovary disease, amyotrophic lateral sclerosis
- Reducing tumor growth, risk of invasiveness, reducing risk of metastasis, increasing survival time, etc.

Advantages:
- Non-toxic microtubule modulating agents due to their ability to leave the total microtubule mass unaffected
- Avoids the gross effect exerted by two major classes of tubulin binding drugs (Taxanes and Vincas)
- Improved antiproliferative activity, aqueous solubility and bioavailability

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