ベンゾフェナンスリジン化合物を先導とする抗腫瘍性化合物の開発

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1999 Fiscal Year Final Research Report Summary

Development of Antitumor Compounds Led by Benzophenanthridine Compounds

Research Project

Project/Area Number

09557199

Research Category

Grant-in-Aid for Scientific Research (B)

Allocation Type

Single-year Grants

Section

展開研究

Research Field

医薬分子機能学

Research Institution

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1997 – 1999

Keywords

benzophenanthridine / protoberberine / marine alkaloid / biomimetic synthesis / total synthesis / anititumor activity

Research Abstract

1. A simple and general synthesis of protoberberines and 13-methylprotoberberines via the same synthetic intermediates was newly developed. This method was applied to a new synthesis of protoberberine alkaloids.
2. A novel biomimetic synthesis of benzophenanthridines form protoberberines through the enamine intermediates was developed. Benzophenanthridine alkaloids such as chelerythrine and nitidine were synthesized by this method.
3. A new and simple synthesis of isocoumarins was developed employing palladium-catalyzed cyclization of o-alkenylbenzoic acids. This method was applied to a synthesis of a benzophenanthridine.
4. Synthesis of hexahydrobenzophenanthridine alkaloids, corynoline and its stereoisomeric alkaloids from corresponding 13-methylprotoberberine alkaloid, corysamine was succeeded through a newly developed biomimetic route. An alkaloid having a unique substitution pattern, ambinine was totally synthesized by this method.
5. A pyridoacridine skeleton was synthesized by a coupling reaction of quinoline derivative with phenylboric acid or phenyltin compound. Synthesis of antitumor marine alkaloids, cystodytin J and deplamine, was successfully realized by this method.
6. We found a benzophenanthridine compound having high antitumor activity as well as activity against drug-resistant tumor cell.

Research Products (2 results)

All | Other

All | Publications (2 results)

[Publications] Miyoji Hanaoka: "Convenient Synthesis of 2,3,9,10-Tetraoxygenated Protoberberine Alkaloids and Their 13-Methyl Alkaloids"Chem. Pharm. Bull.. 48. 399-404 (2000)

[Publications] HANAOKA, Miyoji: "Convenient Synthesis of 2,3,9,10-Tetraoxygenated Protoberberine Alkaloids and Their 13-Methyl Alkaloids"Chem. Pharm. Bull.. 48・3. 399-404 (2000)

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