Development of Antitumor Compounds Led by Benzophenanthridine Compounds

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

Kanazawa University

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Project Period (FY)

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)

URL: https://kaken.nii.ac.jp/report/KAKENHI-PROJECT-09557199/095571991999kenkyu_seika_hokoku_

Published: 2001-10-22