

## 肉腫に対する制癌剤の耐性克服に関する研究

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# 1989 Fiscal Year Final Research Report Summary

## A study on overcoming the drug resistance to sarcoma

Research Project

### Project/Area Number

62570680

### Research Category

Grant-in-Aid for General Scientific Research (C)

### Allocation Type

Single-year Grants

### Research Field

Orthopaedic surgery

### Research Institution

Kanazawa University

### Principal Investigator

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### Project Period (FY)

1987 - 1988

### Keywords

Caffeine / Drug resistance / Anticancer agents / Human tumor clonogenic assay / Flow cytometry / Athymic mice / Human tumor clonogenic assay

### Research Abstract

In this study the combined effect of anticancer agents and caffeine, which inhibits DNA repair, on human sarcomas was examined with various assay techniques. In human tumor clonogenic assay, the combined use of caffeine produced synergistic effects with four DNA-damaging agents (cisplatin, mitomycin C, cyclophosphamide and adriamycin). Particularly by the combination of cisplatin with caffeine, marked synergistic effects were observed in 14 out of 18 specimens (78%) of fresh human tumor specimens. Caffeine markedly increased the cytotoxic effect of cisplatin following mitosis. At this time, the accumulation of S and G2/M phase was reduced on the DNA histogram, and nuclear fragmentations of tumor cells were frequently observed. In assay, using athymic mice, the combination of caffeine and cisplatin showed prominent antitumor effect without significant toxicity. These findings suggest the possibility that caffeine could be a useful drug capable of overcoming drug resistance to sarcomas, as caffeine enhanced the effect of DNA-damaging agents.

## Research Products (11 results)

All Other

All Publications (11 results)

- [Publications] Katsuro Tomita: "Caffeine enhancement of the effect of anticancer agents on human sarcomd cells." Jpn.J.Cancer Res.80. 83-88 (1989) ▼
- [Publications] 富田勝郎: "マウス肉腫培養細胞(S-180)に対するDNA合成阻害剤とカフェインの併用効果" Oncologia. 21. 78-85 (1988) ▼
- [Publications] 土屋弘行: "制癌剤の効果増強に関する基礎的研究——肉腫におけるDNA合成阻害剤とカフェインの併用効果——" 中部日本整形外科災害外科学会雑誌. 30. 1156-1164 (1987) ▼
- [Publications] 土屋弘行: "ヒト肉腫培養細胞におけるシスプラチンとカフェインの併用効果" 癌と化学療法. 14. 3125-3130 (1987) ▼
- [Publications] 土屋弘行: "肉腫におけるカフェインと制癌剤との併用効果について——Clonogenic Assayを用いて——" 癌と化学療法. 14. 2269-2275 (1987) ▼
- [Publications] Katsuro Tomita: "Enhancement of cytocidal and antitumor effect of cisplatin by caffeine in human osteosarcoma" Clinical Therapeutics. 11. 43-52 (1989) ▼
- [Publications] Tomita K and Tsuchiya H: "Caffeine enhancement of the effect of anticancer agents on human sarcoma cells" Jpn. J. Cancer Res.80. 83-88 (1989) ▼
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- [Publications] Tsuchiya H and Tomita K: "The combined effect of cisplatin and caffeine on human sarcoma cells in vitro" Jpn. J. Cancer Chemother.14. 3125-3130 (1987) ▼
- [Publications] Tsuchiya H and Tomita K: "A study on the effect of anti-tumor agents combined with caffeine on established lines of human osteosarcoma cells and primary cultured human sarcoma cells by clonogenic assay" Jpn. J. Cancer Chemother.14. 2269-2275 (1987) ▼

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