

## 骨軟部腫瘍に対するMTT assayに関する研究

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# 1990 Fiscal Year Final Research Report Summary

## Study of MTT Assay for Bone and Soft Tissue Tumor

Research Project

### Project/Area Number

01480365

### Research Category

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

### Allocation Type

Single-year Grants

### Research Field

Orthopaedic surgery

### Research Institution

Kanazawa University

### Principal Investigator

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### Project Period (FY)

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### Keywords

Bone and soft tissue tumor / Chemotherapy / Chemosensitivity test / MTT assay

### Research Abstract

The present study was performed to examine practicality of the MTT assay as chemosensitivity test for bone and soft tissue sarcomas. In eleven human osteosarcoma cell lines, the absorbance of the solubilized formazan was found to be directly proportional to the number of cells. On cell lines, effective drugs at the peak plasma concentration were actinomycin-D, adriamycin, cis-platinum, methotrexate, cyclophosphamide, vincristine. However, at 1/10 peak plasma concentration, these drugs were not effective. These drugs had been reported their efficacy against osteosarcoma. Therefore, it was suggested that the evaluation at peak plasma concentration was appropriate. Etoposide also showed high efficacy rate for cell lines, it would be a candidate for chemotherapy of osteosarcoma. On the basis of experimental results on cell lines, chemosensitivity test using the MTT assay for clinical specimens were performed. Sixty seven specimens of bone and soft tissue sarcomas obtained by surgery or biopsy were used. Of the 67 specimens, sixty four (96%) gave technically successful assay results. All cases seeded over  $1 \times 10^4$  cell/well were successful. The number of drugs tested in successful specimens were 8.4 (mean). Thirty cases were clinically evaluated prospectively or retrospectively. The relationship between this assay and clinical response was 15 true

positives, 2 false positives, 10 true negatives and 3 false negatives. True positive rate was 88%, true negative rate was 77%, and overall predictive accuracy was 83%. In this assay, many samples and anticancer drugs can be analyzed simply and rapidly. A high success rate and a high predictive accuracy of this assay were also showed in this study. Therefore, the MTT assay would be a practical chemosensitivity test for the treatment of bone and soft tissue sarcomas.

## Research Products (10 results)

All Other

All Publications (10 results)

- [Publications] 土屋 弘行: "骨軟部悪性腫瘍における抗癌剤感受性試験としてのhuman tumor clonogenic assay(HTCA)" 別冊 整形外科. 17. 68-71 (1990) ▼
- [Publications] 富田 勝郎: "軟部悪性腫瘍に対する化学療法の意義" 中部日本整形災害外科学会雑誌. 33. 626-628 (1990) ▼
- [Publications] 森川 精二: "MTT assay法を用いた骨軟部悪性腫瘍に対する抗癌剤感受性試験の研究" 十全医学会雑誌. ▼
- [Publications] 土屋 弘行: "術前化学療法による骨肉腫患肢温存手術の適応拡大" 別冊 整形外科. 17. 136-140 (1990) ▼
- [Publications] 土屋 弘行: "悪性骨軟部腫瘍に対する昇圧化学療法の経験" 癌と化学療法. 16. 1776-1781 (1989) ▼
- [Publications] Hiroyuki, Tsuchiya: "Human tumor clonogenic assay (HTCA) for malignant bone and soft tumors." Bessatsu seikei geka. 17. 68-71 (1990) ▼
- [Publications] Katsuro, Tomita: "Significance of chemotherapy for soft tissue sarcoma." The Central Japan Journal of Orthopedic & Traumatic Surgery. 33. 626-628 (1980) ▼
- [Publications] Seiji, Morikawa: "Chemosensitivity test for bone and soft sarcomas using the MTT assay." Journal of the Juzen Medical Society. ▼
- [Publications] Hiroyuki, Tsuchiya: "Down-staging by preoperative chemotherapy for limbsalvage surgery of osteosarcoma." Bessatsu seikei geka. 17. 136-140 (1990) ▼
- [Publications] Hiroyuki, Tsuchiya: "AngiotensinII-induced hypertension chemotherapy for bone and soft tissue sarcomas" Japanease Journal of Cancer Chemotherapy. 16. 1776-1781 (1989) ▼

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