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—— BRIEF NOTE ——

EFFECT OF NEOCARZINOSTATIN ON HEMOLYTIC PLAQUE-FORMING CELL PRODUCTION IN MICE

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Neocarzinostatin (NCS), a new anti-leukemic substance with a high molecular weight, was first isolated from culture filtrates of Streptomyces carzinostaticus (1). Its anti-leukemic activity has been demonstrated experimentally in various mice leukemias (2, 3). Its effect, however, on the immune response has not been reported. Our preliminary data reported here on mice indicates that NCS has a definitive effect on the production of hemolytic plaque-forming cell (HPFC).

Mice used were 1.5-2.0 month-old C57BL males, weighing 20-22 g each. The mice were sensitized by i. p. injection of 0.2 ml of 20% suspension of sheep red blood cells (SRBC) on Day 0. NCS at 1.0 mg/kg was injected i. p. once to six different experimental groups: Group A—12 days prior to SRBC injection; Group B—8 days prior to SRBC injection; Group C—4 days prior to SRBC injection; Group D—on the day of SRBC injection: Group E—2 days after SRBC injection and Group F—4 days after SRBC injection. Control mice were injected with 0.2 ml physiological saline solution. On day 5, HPFC assay was performed according to the Cunningham and Szenberg (4) plaque technique. As shown in Table 1, the mean HPFC per 10^6 spleen cells was 348.6 in Group A, 8.9 in Group B, 8.8 in Group C, 265.9 in Group D, 358.8 in Group E, 465.6 in Group F and 993.5 in the control group.

These results clearly show a moderate to marked decrease of HPFC production regardless of the time duration between SRBC and NCS administration. NCS seems to have a suppressive effect as some alkylating agents. The main anti-leukemic action of NCS has been thought to be through inhibition of DNA synthesis (5). However, our results suggest that NCS has a direct cytotoxic action on leukemic cells apart from the inhibition of DNA synthesis. However, further study including NCS effects on cellular immunity are needed prior to definitive conclusions.

TABLE 1 EFFECT OF NEOCARZINOSTATIN (NCS) ON HEMOLYTIC PLAQUE-FORMING CELL (HPFC) PRODUCTION OF MICE TO SHEEP RED BLOOD CELL

NCS administration on day	Number of mice	Total spleen cell ($\times 10^6$)	HPFC per 10^6 spleen cells	HPFC per spleen ($\times 10^3$)
−12	3	111.7 (63.8-151.3)	348.6 (59.5-879.7)	49.9 (3.8-133.1)
− 8	2	55.5 (21.0-90.0)	8.9 (0-17.8)	0.8 (0-1.6)
− 4	3	56.7 (25.0-75.0)	8.8 (0-18.5)	0.6 (0-1.3)
0	3	61.3 (38.8-82.5)	265.9 (64.4-608.6)	20.4 (2.5-51.0)
+ 2	3	68.8 (23.8-98.8)	358.8 (6.1-965.4)	28.0 (0.6-80.9)
+ 4	3	66.2 (48.5-80.0)	465.6 (62.9-1140.0)	35.0 (4.4-91.2)
Control (treated by saline)	3	84.6 (78.8-93.8)	993.5 (630.7-1293.2)	85.6 (49.7-121.3)

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