CHAPTER IV

MAINTENANCE OF TUMOR CELL LINE DALTON'S LYMPHOMA AND DETERMINATION OF LIFE SPAN OF WHITE MICE

MAINTENANCE OF TUMOR CELL LINE DAL AND THE DETERMINATION OF LIFE SPAN OF C_3H / HE MICE

Description of Ascites tumor Dalton's lymphoma:

The occurrence of free tumor cells in certain neoplastic exudates was detailed, and the term ascites tumor has generally been applied to the exudates accumulation in the peritoneal cavity containing a large proportion of free tumor cells. Such tumors with the state of a nearly pure culture, offer a great many advantages over the use of solid tumors. Generally the ascites tumors have been developed experimentally by implanting solid tumor preparations intraperitoneally into genetically related strains of animals. After a period of time, samples of the abdominal fluid are removed and reinoculated intraperitoneally into a fresh group of animals (Goldie, and Felix, 1951; Klein, 1951). By suitable modifications in procedure it is possible to shift the ratio between solid growth and free cells in the peritoneal fluid (Klein et al., 1951). A systematic method of producing ascitic from solid tumors has been described (Klein et al., 1951) and shown to be applicable to a wide variety of experimental neoplasms.

The existence of individual, free tumor cells makes possible the experimental demonstration of the transmissibility of a single tumor cell.

Dalton's lymphoma (DAL) is a transplantable T cell lymphoma of spontaneous origin (Klein, 1951 and Goldie, 1951). DAL growth has been shown to be associated with a concomitant inhibition of humoral and cell-mediated immune responses, involving the abrogation of the functions of macrophages, B and T cells (Parajuli and Singh, 1977; Kumar et al., 1994; Kumar et al., 1995 and Priare et al., 1995). Thus the use of DAL has been proved to be successful.

Maintenance of Dalton's lymphoma:

DAL cells were maintained by weekly intraperitoneal (i/p) inoculation of 10^6 cells / mouse (Gothoskar and Ranadive, 1971; Majumdar et al., 1997). Transplantable ascites DAL tumor was maintained in C_3 H / He male mice (as described in earlier chapter II) of 9 – 10 weeks age, weighing 18 – 22 g by serial i. p. transplantation of 1 x 10^7 viable tumor cells. After 7^{th} – 15^{th} day of DAL inoculation in white mice ascites fluids were fully formed. Now these fluids were transferred to new mice with the help of a syringe, which were diluted with phosphate – buffered saline, (PBS). 0.25 ml of DAL was injected at the lower part of the belly in mice. Tumor transplanted animals survived for 21 – 23 days with a mean survival time of 22 days.

Determination of life span:

Using BRH_2 on Dalton's lymphoma implanted in mice it has been observed that the 100 mg / kg / bw on 1^{st}, 5^{th} and 9^{th} day (i/p) can increase the life

span above 70% (23 days to 40 days) ***(Table.4.1)***. The dose 100 mg / kg / bw are used for our experiment.

Table: 4.1: Survival of C_3H / He mice bearing Ascites Dalton's lymphoma cells, treated with BRH_2 [In carboxymethyl cellulose (CMC) used as vehicle]

Group	Dose mg/kg/bw	Experiment– 1 MST (Days)	% ILS	Experiment– 2 MST (Days)	% ILS	Experiment– 3 MST (Days)	% ILS
Control (DAL + CMC)	–	11	-	10.5	-	11.5	-
BRH_2 (Treated)	50	15	36.3	15.5	47.6	16	39
	100	19.5	77.3	19	80.9	20	73.9
	150	16.0	45.5	16.5	57.1	17	47.8
	200	14.5	31.8	16	52	16.5	43
	400	4	Toxic	3.5	Toxic	3.5	Toxic

Drug administered i.p. on days 1, 5 and 9

% ILS = % Increase in life span

MST = Median survival time.