

CHAPTER - IV.

Effect of Jawaharene, Mitomycin C and Actinomycin D  
on Respiration and Glycolysis of Ehrlich Ascites Cells  
of Mice.

As it has been observed that tumour tissues show a considerable rate of respiration and glycolysis, the effect of drugs Jawaharene, Mitomycin C and Actinomycin D on the respiration and glycolysis of Ehrlich ascites cells has been studied in this chapter.

Materials and Methods :

Jawaharene :- Jawaharene was dispersed in Tyrode's balanced salt solution using Tween 80 as dispersing agent and the final concentration was made 100  $\mu\text{g}/0.1$  ml and was used in doses of 50  $\mu\text{g}$ , 100  $\mu\text{g}$ , 150  $\mu\text{g}$  and 200  $\mu\text{g}$  per flask.

Mitomycin C :- Mitomycin C was dissolved in double distilled water and suitably diluted to get a concentration of 100  $\mu\text{g}/1.0$  ml and was used in doses of 5  $\mu\text{g}$ , 10  $\mu\text{g}$ , 15  $\mu\text{g}$  and 20  $\mu\text{g}$  per flask.

Actinomycin D :- It was dissolved in double distilled water and diluted to a concentration of 200  $\mu\text{g}/1.0$  ml and was used in doses of 20  $\mu\text{g}$ , 50  $\mu\text{g}$ , 100  $\mu\text{g}$  and 150  $\mu\text{g}$ .

Ehrlich ascites cell suspension was prepared as described in Chapter-II.

Experiment :

Incubation mixture used was same as described in Chapter-III, part II.

0.3 ml of tumour cell suspension and Jawaharene, Mitomycin C or Actinomycin D were added in graded doses. 0.9% NaCl was added to make the final volume 3.0 ml.

The flasks were then fitted with Warburg manometers and placed in a bath of 37<sup>o</sup> C, the gas phase being air. Uptake of O<sub>2</sub> and CO<sub>2</sub> production were measured manometrically (Umbreit et.al. 1959).

Table - 4

Effect of Jawaharene, Mitomycin C and Actinomycin D on the  
Oxygen Uptake of Ehrlich Ascites Cells.

Results are expressed as  $\mu\text{l}$  of  $\text{O}_2$  uptake per mg of dry tissue per hour and represent experimental value from 5 different experiments with S.D. $\pm$ .

Antibiotics in $\mu\text{g}$ .	$\text{O}_2$ uptake	% of Inhibition
Control	$26.0 \pm 0.4$	
50 Jawaharene	$23.5 \pm 0.5$	9.2
100 ,,	$20.4 \pm 0.6$	21.5
150 ,,	$17.4 \pm 0.4$	32.8
200 ,,	$12.9 \pm 0.4$	50.3
5 Mitomycin C	$17.4 \pm 0.6$	32.6
10 ,,	$13.5 \pm 0.4$	47.6
15 ,,	$12.5 \pm 0.3$	51.6
20 ,,	$11.7 \pm 0.3$	54.9
20 Actinomycin D	$23.2 \pm 0.2$	10.3
50 ,,	$18.0 \pm 0.4$	22.2
100 ,,	$16.9 \pm 0.4$	27.2
150 ,,	$15.4 \pm 0.2$	40.7

Table - 5.

Effect of Jawaharene, Mitomycin C and Actinomycin D on  
the CO<sub>2</sub> Production of Ehrlich Ascites Cells.

Results expressed as  $\mu$ l of gas produced per mg of dry tissue per hour and represent value from 5 different experiments with S. D.  $\pm$ .

Antibiotics in $\mu$ g	CO <sub>2</sub> production	% of Inhibition
Control	20.1 $\pm$ 0.5	
50 Jawaharene	18.1 $\pm$ 0.4	9.8
100 ,,	16.7 $\pm$ 0.3	16.3
150 ,,	13.5 $\pm$ 0.4	32.7
200 ,,	10.1 $\pm$ 0.2	49.2
5 Mitomycin C	13.5 $\pm$ 0.3	32.7
10 ,,	11.0 $\pm$ 0.3	44.6
15 ,,	10.6 $\pm$ 0.4	46.4
20 ,,	9.0 $\pm$ 0.6	54.3
20 Actinomycin D	17.9 $\pm$ 0.3	11.6
50 ,,	15.1 $\pm$ 0.2	24.2
100 ,,	13.5 $\pm$ 0.6	32.4
150 ,,	10.5 $\pm$ 0.4	47.6

Results :

The data presented in Table 4 and Table 5 showed that Jawaharene had profound inhibitory effect on both respiration and glycolysis of tumour cells. Its inhibitory effect was compared with two well known antibiotics, namely Mitomycin C and Actinomycin D.