

EFFECTS OF HYPERTHERMIA AND MICROWAVE INDUCED HYPERTHERMIC SHOCK
ON HPC CELLS.

A comparison is made between slow waterbath heating ($dT/dt = 0.22^{\circ}\text{C/s}$) and rapid microwave heating ($dT/dt = 9.2^{\circ}\text{C/s}$) prior to 15 minute hyperthermic exposures for human prostate cancer cells in vitro. The effect of dT/dt is shown to be small in the exposure range $43.5 - 47.5^{\circ}\text{C}$. Data are also presented to show that microwave induced hyperthermic shock ($dT/dt = 9.2^{\circ}\text{C/s}$) followed by immediate waterbath cooling (an exposure of a few seconds above 37°C) has no effect on cell survival below 43°C . Above this temperature, the percentage cell survival (S) to hyperthermic shock decreases with increasing exposure temperature (T_E) according to the linear relationship $S = -11.6T_E + 593$, ($43 < T_E < 50^{\circ}\text{C}$) with a correlation coefficient $r = 0.95$. Effects have been assayed by cellular attachment and colony formation; they are also shown by SEM photography.