

**POTENTIATION OF THE CYTOTOXICITY OF ADRIAMYCIN BY THE CARDIO-PROTECTIVE DRUG CARNITINE**

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Adriamycin is an anti-cancer drug used in the treatment of acute leukemias and lymphomas. Patients receiving this drug have shown an unusually high incidence of cardiac toxicity, which has somewhat limited the use of the drug. In the first phase of this study, Carnitine was shown to protect the isolated Langendorff heart against the cardiac toxicity of Adriamycin. The increase in coronary vascular resistance, the decrease in force of contraction and heart rate and the arrhythmias usually produced by Adriamycin were prevented in 15 of the 20 preparations studied. Likewise the cardio-toxic effects of Adriamycin observed in intact Rhesus monkeys was prevented by pretreatment with 500 mg of carnitine. A second series of studies were then carried out to determine if the cardio protective effects of Carnitine might interfere with the cell killing capabilities of Adriamycin. Exponentially growing mono cultures of Chinese hamster ovary (CHO) cells were used to study the interaction of the 2 drugs. Exposure of the CHO cells to Carnitine 1 hour before or simultaneously with Adriamycin had no effect on the drug. Carnitine 1 hour after Adriamycin, however, significantly increased the cell-kill. This increase in cyto toxicity is not due to Carnitine per se since it has been demonstrated that exposure of CHO cells to the drug alone did not alter the normal rate of cell division. Although studies in tumor bearing animals are not yet complete, present data suggest that Carnitine may be a valuable adjunct to current chemotherapeutic regimens such as Adriamycin.