**STUDY OF THERAPEUTIC AND CARDIOPROTECTIVE EFFECT OF CURCUMIN ON ISOPROTERENOL-INDUCED MYOCARDIAL INJURY IN RATS**

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Curcumin (diferuloylmethane), a principal member of the Curcuma species, is find to suppress TGF-beta activity and for his well-known anti-inflammatory and anti-oxidant activities.

*Objectives*: Hence we wanted to test the cardioprotective (pretreatment) and therapeutic (posttreatment) potential effects of curcumin (CUR) in isoproterenol (ISO)-induced myocardial injury.

*Methods*: We compared between 6 groups designed as: Control, DMSO, ISO, CUR, CUR+ISO and ISO+CUR for lipid peroxidation, biochemical parameters and histopathological findings in isoproterenol (ISO)-induced myocardial injury in Wistar rats. In this study Curcumin (200mg/kg) was administered using Alzet Mini-pumps for 15 days along with ISO (85 mg/kg, SC, at 24 hr interval)on 1st day (Group ISO+CUR) or 14th day (Group CUR+ISO) in rats. For immunohistochemistry we used antibody 3-nitrotirosine (3-NT). We measured the activities of creatine kinase-muscle, brain (CK-MB), malondialdehyde (MDA), glutathione (GSH) and Superoxide dismutase (SOD). For histopathological examination measuring collagen deposition, picro-sirius red staining was used. In addition to our in vivo work, we tested the role of curcumin to induce survival in a primary culture of one-day-old neonatal rat cardiac myocytes. For this we culture cells with ISO (10microM) for 48 hours and stimulated them with curcumin (4 microM) for 2 hours and stain for apoptosis marker, TUNEL.

*Results*: Our results suggest that curcumin pretreatment decreased the nitrotyrosine levels (marker of formation of peroxynitrite) (P<0.001) and a tendency towards reduction in the GSH values, but this reduction was not observed in the posttreatment group (ISO + CUR). Cardiac tissue collagen concentration increased in ISO administered group and decreased after curcumin pretreatment and posttreatment groups (P<0.001). The ISO-CUR treated groups showed a statistically significant decrease in TUNEL staining (P< 0.001) when compared to ISO only administration group.

*Conclusion*: Our preliminary data suggests that within a narrow dose range curcumin could reduces isoproterenol-induced cardiomyocyte death, lipid peroxidation and collagen deposition.