Possible Cardio-protective Effects of 5-Deazaflavin derivative TND1128; Omega-3 fatty acids each against Daunorubicin-induced Cardiotoxicity in Rats: A Comparative Study

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INTRODUCTION

Daunorubicin is a widely used chemotherapeutic agent in the treatment of various cancers, particularly leukemia. However, its clinical use is limited by its cardiotoxic effects, which can lead to heart failure and other cardiovascular complications.

AIM

- To evaluate the cardio-protective effects of TND1128 and omega-3 fatty acids against daunorubicin-induced cardiotoxicity in rats.

- To compare the efficacy of these treatments in preventing cardiac damage.

METHODOLOGY

Animal Model:

A total of 36 male rats were used in this study,divided into six groups of six rats each.

- 1. control G received corn oil
- 2.induction G injected with daunorubicin 15mg\kg
- 3.TND1128 G 10mg/kg
- 4.TND+ DAU G
- 5.Omega-3 fatty acid G received 600mg/kg
- 6.Omega-3+TND G

BIOMARKERS EVALUATED:

- Oxidative stress (MDA, GSH)
- Inflammatory cytokines (IL-13, TNF-α via RT-PCR)
- Cardiac troponin T& CK1
- Apoptotic markers (Caspase-3, by Western blot)
- Histopathological examination of cardiac tissue

RESULTS

- **Oxidative Stress:** MDA levels increased and GSH levels decreased in Daunorubicin group. Treatment with both drugs improved these markers, especially TND1128
- **Inflammation:** TNF-α and IL-13 were upregulated with Daunorubicin but reduced with treatment, with a more notable effect from TND1128.

RESULTS

- **Apoptosis:** Caspase-3 expression increased in the DAU group. Both drugs reduced their levels, with TND1128 showing a stronger antiapoptotic effect.
- **Histology:** Cardiac damage was evident in the Daunorubicin group. Treated groups showed improved tissue structure and reduced degeneration

CONCLUSION

Both TND1128 and omega-3 fatty acids demonstrate promising cardio-protective effects against daunorubicin-induced cardiotoxicity in rats. These findings warrant further investigation into their potential clinical applications for protecting patients undergoing chemotherapy.


THANK YOU