Title: "Identification of would be drug moiety from the plant source and testing its effect against cardiovascular disorders preclinically"

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Abstract

As per reports of WHO cardiovascular disorders are considered as a prime cause of death worldwide. The available treatments are not just sufficient, therefore there is a need of discovering new lead molecules which would be more effective to treat hypertension. Huge ethnopharmacological database can be utilized to develop new competent lead molecules. Liriodendrin is the phytoconstituents found in *Boerhavia diffusa* plant. Literature survey revealed that the structures of liriodendrin (LRD) is similar to matairesinol, which is effective in cardiovascular disorders. Hence an attempt is made to explore the pharmacological potential of LRD in experimental animals. The phytoconstituent was isolated from *Boerhavia diffusa* roots and was characterized by HPLC, NMR and mass spectrometry. To establish safety profile of phytoconstituent, an acute and subacute oral toxicity studies were performed according to OECD guidelines (425 & 407). According to the findings, the LRD did not result in any fatality. The phytoconstituent is safe as their LD_{50} found was larger than 2000 mg/kg and MTT as 1000 mg/kg by per oral route. The antihypertensive effect of LRD was examined in DOCA salt, adrenaline and fructose induced

hypertension models. Blood pressure, heart rate, lipid profile, oxidative stress, and endothelial function were significantly ($p<0.001$) improved by the LRD. LRD's action was found to be comparable to that of a conventional drug nifedipine. Ex-vivo studies revealed the mechanism of action of LRD i.e. it reduced the hypertension and related complications by enhancing eNOS expression and blocking calcium channel. These findings explored the potential of LRD in the treatment of oxidative stress and hypertension. In future LRD can be further evaluated extensively to be potential lead molecules.

Keywords: Liriodendrin, Calcium channel blocker, eNOS expression, oxidative stress.