

Study of the effects of *Gleditsia caspica* extract in rat isolated thoracic aorta

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Background and Aims: This study is aimed to evaluate the effect of methanolic extract of *Gleditsia caspica* on rat isolated thoracic aorta and to study its mechanism of action.

Methods: The rat thoracic aorta was isolated and was cut into rings to be mounted on the organ bath containing Krebs solution by fixing for 60 min with 2 g of tension. Isometric tensions of the extract were recorded at the presence of drugs; prazosin, nifedipine, calcium chloride-free Krebs solution and aorta with damaged endothelium. In separate experiments, the tissue was incubated for 15 min with nifedipine and prazosin, and then the dose – response curve for extract was plotted. Likely of effect of extract through extracellular calcium mechanism was investigated with plotting dose – response curve in calcium-free medium. It also reviewed the role of Endothelin, an endothelial-dependent vasoconstrictor by performing dose - response curve for extract on aorta with removed endothelium.

Results: The methanolic extract of *Gleditsia caspica* has reduced contractile effect of nifedipine and prazosin. The calcium chloride-free medium and the aorta rings with destroyed endothelium, reduced the contractile effect of the extract.

Conclusions: The methanolic extract at a dose-dependent manner showed significant contractile effect on rat isolated thoracic aorta. The main effect of the extract is affiliated to extracellular calcium, which was disappeared at the calcium-free medium and at the presence of nifedipine. Even extract showed contractile effect independent of extracellular calcium. By inhibition of alpha receptors, the contractile response is significantly reduced the extract that is probably part of its effects has done through alpha receptors. With the destruction of the aortic endothelium, the extract has showed contractions with reduction in the intensity, which shows the endothelium depend factors such as endothelin may also have been implicated in the contraction process.

Keywords: Contractile response; *Gleditsia caspica*; Aorta; Rat