

**A comparative Phytochemical, *In vivo* and *In vitro* Anti-inflammatory Activities of *Desmodium velutinum* Willd and *Desmodium scorpiurus* Desv leaves**

ADEDIWURA FRED-JAIYESIMI, OLUWASEUN OGUNLANA. OLABISI ONABANJO UNIVERSITY, SAGAMU CAMPUS, Nigeria

*Desmodium species* (Family Papilionaceae) are mainly perennial shrubs. *Desmodium velutinum* Willd (commonly known as Tick clovers) is an erect or semi-erect perennial shrub while *Desmodium scorpiurus* Desv (Tick Trefoil) may be prostrate to weakly erect. In traditional Chinese medicine, *Desmodium species* are used in the treatment of rheumatism, dysentery, wounds, cough, malaria and hepatitis. The study aims at carrying out a comparative phytochemical screening and anti-inflammatory investigations on the extracts and fractions of *Desmodium velutinum* and *Desmodium scorpiurus* leaves in order to establish and justify the use of these plant species in the folklore/traditional treatment of inflammation or rheumatism.

The Phytochemical, *in vivo* and *in vitro* anti-inflammatory assays were carried out using standard and established procedures (1,2,3). In the *in vitro* assay, 0.2ml of fresh egg albumin was reacted with 2.8ml of phosphate buffer saline (PBS, pH<sub>6.4</sub>) and 2 mls of varying concentrations of the plant extract/fractions (2000, 1000, 500, 250 and 125µg) and control (Diclofenac). The mixtures were incubated at 37±°C for 15 minutes in a water bath at 70°C. The absorbance of the cooled mixtures were read at 660nm in a UV-Spectrophotometer. The percentage of protein denaturation was then calculated. In the *in vivo* assay, the diameter of the rats right hind paws were measured before administering extract/fractions and control. 0.1 ml of fresh egg albumin was induced into the right hind paw and the paw diameter measured at interval of one hour for six hours (0.1.2.3.4.5,6 hrs). The percentage inhibition of oedema was calculated,

The Phytochemical screening of the leaves of *D. velutinum* and *D. scorpiurus* showed similarities in the secondary metabolites they contained. Flavonoids, saponins, Tannins and sterols were present in the leaves of the studied *Desmodium species*. However, the leaves of *D. velutinum* possessed resins while the leaves of *D. scorpiurus* lacked it. In the *in vivo* anti-inflammatory assay, the methanol extract and n-hexane fractions of *D. velutinum* at 200, 100 and 50 mg/kg exhibited similar anti-inflammatory activities over a period of 6 hours while the methanol extract, ethyl acetate and n-hexane fractions of *D. scorpiurus* exhibited a dose dependent activity (p<0.05). In the *in vitro* assay, though all the extracts and fractions of *D. velutinum* and *D. scorpiurus* exhibited anti-inflammatory activities, the hexane fractions of the two species exhibited the highest percentage inflammatory inhibition of 76.9% and 68.6% at a dose of 2000µg/ml respectively. The activities of the hexane fractions of these species were comparable to the activity of the reference drug (Diclofenac).

This study therefore justifies the use of *Desmodium species* in the treatment of rheumatism in the traditional medicine and also indicates that *D. velutinum* and *D. scorpiurus* leaves could be potential natural sources of anti-inflammatory drugs/medications.

## References

1. Harborne JB Phytochemical Methods: A Guide to modern technique of plant analysis. 2ed Chapman & Hall, London 1991
2. Sangita C et al., Pharmacog J :4(29); 47 , 2012.
3. Winter CA et al, Exp Bio Med 111: 544, 1962