Studies on the nematicidal potentials of *Pleurolobus gangeticus* and *Tragia involucrata*

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The study aimed at exploring and validating the nematicidal potentials of *Pleurolobus gangeticus* and *Tragia involucrata* against the gastrointestinal parasitic nematode of cattle called *Haemonchus contortus*. Both plants are well known for their ethno-pharmacological properties and have been used by various traditional healers. Plant parts were extracted using ethyl acetate, ethanol and water in an accelerated solvent extractor and the crude extracts were evaluated for its nematicidal potentials against eggs and L3 larvae of *H. contortus* using egg hatch inhibition assay and larval paralysis assays respectively. The effects of the potent extracts on mitotic machinery was evaluated *in vitro* by performing an *Allium cepa* assay. Molecular docking analysis was also performed to evaluate the binding affinity of phytoconstituents to tubulin protein. The ethanol extracts of both *P. gangeticus* (DME) and *T. involucrata* (TME) showed the strongest inhibition of 90.83±0.98% and 90.5±1.64% respectively on hatching of eggs at 10 mg/mL concentration. At this concentration, larval paralysis assay also showed 65.5±2.25% mortality for DME and 64.5±0.54% mortality for TME treated nematodes. Ethyl acetate extracts of both plants showed relatively less inhibition on egg hatch and larval paralysis and the aqueous extracts were the least potent among the three. The *Allium cepa* assay revealed an accumulation of cells in the metaphase when treated with colchicine (32.3%) or extracts (DME-36.1%; TME-35.5%) as compared to the vehicle controls (22.9%). *In silico* analysis revealed that several components in DME and TME has strong binding affinity with the colchicine binding site (CBS) of tubulin protein complementing its observed anthelmintic potential.

Keywords: Anthelmintics, Ethnopharmacology, *Haemonchus contortus*, Molecular docking, Tubulin