

## Bioassays Activity and FT-IR Analysis of *Clinacanthus nutans* (Burm F.) Lindau Leaves Extracts

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### ABSTRACT

**Objectives:** The present study was designed to investigate the antidiabetic and antioxidant activities of the different solvents extracts of *Clinacanthus nutans* (Burm. F) Lindau leaves through different bioassays as well as to identify the functional group(s) responsible for the particular bioactivity through Fourier transform infrared (FT-IR) spectroscopy.

**Design and method:** Mature leaves of *C. nutans* were collected, oven dried at 40 °C, powdered, and extracted in 80% hydro-methanol to obtain crude extract. This extract was then subjected to liquid to liquid partition to obtain hexane, ethyl acetate, butanol and aqueous extracts. All the extracts were then analysed for their bioactivity through various bioassays which include anti-oxidant (DPPH and FRAP) assay, xanthine oxidase and  $\alpha$ -glucosidase inhibitory assays. FTIR analyses for the qualitative identification of bioactive compounds was then carried out to all the extracts.

**Results:** Bioactivity analyses of the plant's leaves extracts on anti-oxidant (DPPH and FRAP) assay, xanthine oxidase and  $\alpha$ -glucosidase inhibitory assays revealed that the hexane extract was highly active against  $\alpha$ -glucosidase. Meanwhile ethyl acetate exhibited average activity in DPPH scavenging and xanthine oxidase inhibitory assays. Highest FRAP value was exhibited by ethyl acetate extract compared to others. Interestingly, FT-IR spectra analyses of each extract confirmed the presence of different functional groups that may have contributed to the various biological activity.

**Conclusion:** The results of the present study produced the FTIR spectrum profile for the vulnerable medicinally important plant *C. nutans* (Burm. F) Lindau that further confirms its medicinal values. Hence, *C. nutans* leaves extract is medicinally potent that may serve essentially in the development of new pharmaceuticals for natural plant-based medicine.

**Keywords:** *Clinacanthus nutans* (Burm. F) Lindau, DPPH, FRAP, xanthine oxidase,  $\alpha$ -glucosidase, FTIR, active principles