

Title : Antidiabetic and Hepatoprotective Effects of *Clinacanthus nutans* leaf Extract in Type 2 Diabetic Rats.

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Type of presentation* (choose 1) :

Oral Presentation (เฉพาะ ตัวแทนศ.ที่สาขาเลือกให้นำเสนอแบบบรรยาย)

Poster (กรณี นำเสนอผลงานปัญหาพิเศษ/การค้นคว้าอิสระ)

Cooperative Education (กรณี นำเสนอผลงานสหกิจศึกษา)

ABSTRACT

Type 2 Diabetes Mellitus (T2DM) is a significant health concern often associated with obesity, which is linked to the development of Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD). This study aimed to evaluate the efficacy of *Clinacanthus nutans* extracts in ameliorating diabetes and preventing liver damage in experimental models. Male Wistar rats were divided into a normal diet (ND) control group and a high-fat (HF) diet group. Diabetes was induced in the HF group via administration of Nicotinamide and Streptozotocin (STZ). After confirmation of diabetes, the diabetic rats were treated with *C. nutans* extract at doses of 100 and 200 mg/kg (DM100, DM200), a combination of *C. nutans* extract and Metformin at 100 mg/kg (DMCOM), or Metformin at 100 mg/kg (DMMET). Upon completion of the experiment, the DMCOM group exhibited a statistically significant reduction in metabolic parameters and liver function markers ($p < 0.05$) compared with the untreated diabetic group. Histopathological examination of the liver tissue in diabetic rats revealed evidence of steatosis (fatty liver) and ballooning degeneration. However, administration of *C. nutans* extract, either alone or in combination with Metformin, significantly attenuated

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these hepatic tissue abnormalities. These effects were particularly pronounced in the combination therapy group. These findings suggest the potential of *Clinacanthus nutans* as a promising adjunctive therapeutic option for the future treatment of diabetes.

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