Synthesis, spectroscopic characterization and biological evaluation of phenanthridine derivatives as potential DPP-IV Inhibitors

By

Maram Abdallah Aburezeq

Supervisor

Dr. Reema Abu Khalaf

Abstract

Diabetes mellitus (DM) is a metabolic disorder characterized by the presence of hyperglycemia due to defective insulin secretion, defective insulin action or both. Dipeptidyl peptidase-IV (DPP-IV) inhibitors are relatively new class of oral antihyperglycemic agent that enhance insulin secretion by reducing degradation of endogenous incretin hormones GIP and GLP-1 that's secreted from the intestinal endocrine cells in response to food ingestion to stimulate the secretion of insulin from beta cells of pancreas.

In this study synthesis of four phenanthridine derivatives **3a-3d** was carried out. The synthesized molecules were fully characterized using ^{1}H-NMR, ^{13}C-NMR and IR. *In vitro* biological evaluation tests shown comparable inhibitory activity for the targeted compounds ranging from 10%-27% at 100 µM concentration. In conclusion, phenanthridines could serve as potential DPP-IV inhibitors that requires further structural optimization in order to enhance their inhibitory activity.