

Group 5: *Carlina* plant chemical constituents and pharmacology

Nidal Amin Jaradat, Amjad Yahya, Omar Shehadi, Rashed Omair

Abstract

Background: Plant products are a rich source of pharmacologically active molecules and are considered an important and attractive field of scientific investigation for the development of new drugs.

Methods: Several qualitative and quantitative phytochemical tests were performed on *Carlina curetum* solvent fractions utilising standard phytochemical procedures, followed by an investigation into their ability to inhibit the enzymes α -amylase, α -glucosidase and lipase and an assessment of cytotoxic activity against HeLa and Colo-205 cells using standard biochemical and biotechnological methods.

Results: The results revealed that the aqueous and methanol fractions had the highest α -amylase enzyme inhibitory activity with IC_{50} values of 21.37 ± 0.31 and 30.2 ± 0.42 $\mu\text{g/mL}$, respectively, in comparison with acarbose, which had an IC_{50} value of 28.18 ± 0.42 $\mu\text{g/mL}$. The methanol fraction showed potent α -glucosidase inhibitory activity with an IC_{50} value of 27.54 ± 4.28 $\mu\text{g/mL}$; the α -glucosidase inhibitory activity acarbose was 37.15 ± 0.33 $\mu\text{g/mL}$. The hexane fraction had the greater anti-lipase activity than orlistat. In addition, 0.5 mg/mL of the *C. curetum* acetone and hexane fractions had pronounced cytotoxic effects on the Colo-205 cancer cell line, and 0.625 mg/ml of the *C. curetum* hexane fraction had potential cytotoxic effects against the cervical epithelial carcinoma (HeLa) cell line.