

# 27<sup>th</sup> European Diabetes Congress

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## *Cichorium pumilum* as a source of anti-diabetic compounds: Chemical composition, cytotoxicity and GLUT4 translocation

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Diabetes represents a group of common diseases that are characterized by dysregulation of blood glucose levels. Plants are traditionally used for management of diseases including diabetes. The incidence of type 2 diabetes mellitus (T2DM) has been on the increase in recent times. Although several oral treatments for T2DM are available, some of them have been found to elicit undesirable side effects. A considerable combination of medicinal plants has recently been proven to possess therapeutic potentials to manage T2DM, and this has prompted studies primarily focusing on the therapeutical aspect of these plants, and ultimately, their commercialization. In this present *in vitro* study, we tested the chemical composition, cytotoxicity and anti-diabetic activity of *Cichorium pumilum*, methanolic extract. GC/MS phytochemical analysis of *Cichorium pumilum* was done. Methanol extract revealed 8 compounds in *Cichorium pumilum*. The efficacy of *Cichorium pumilum* extract in enhancing glucose transporter-4 (GLUT4) translocation to the plasma membrane (PM) was tested in L6 muscle cells stably expressing myc-tagged GLUT4 (L6-GLUT4myc) using cell-ELISA test. Results obtained here indicate that methanol extract was safe up to 250 µg/ml as measured with MTT assay. The methanol extract was the very efficient in GLUT4 translocation enhancement. It increased GLUT4 translocation at 125 µg/ml by 1 and 1.5 folds relative to the control in the absence and presence of insulin, respectively. These findings indicate that *Cichorium pumilum* possesses anti-diabetic activity in part by enhancing GLUT4 translocation to the PM in skeletal muscle.

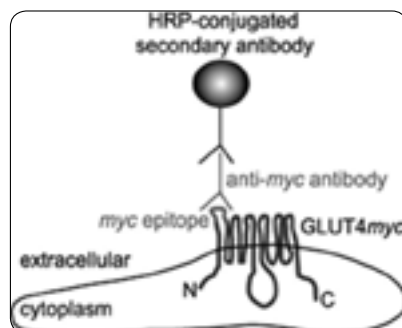


Figure 1: Model demonstrating the detection of the membrane insulin-responsive glucose transporter 4 (stably expressing myc-tag) -GLUT4myc

### Recent Publications

1. Sleman Kadan, Saad B, Sasson Y and Zaid H (2018) *Gundelia tournefortii* anti-diabetic efficacy: chemical composition and GLUT4 translocation. Evidence Based Complementary and Alternative Medicine (eCAM) DOI: 10.1155/2018/8294320.
2. Sleman Kadan, Saad B, Sasson Y, Benvalid S, Linn T, Cohen G and Zaid H (2018) Anti-diabetic activity and chemical composition of *Teucrium Polium* L. Advancement in Medicinal Plant Research 6(1):1-8.
3. Sleman Kadan, Saad B, Sasson Y and Zaid H (2016) *In vitro* evaluation of anti-diabetic activity and cytotoxicity of chemically analyzed *Ocimum basilicum* extracts. Food Chemistry 196:1066-1074.
4. Sleman Kadan, Bashar Saad, Yoel Sasson and Hilal Zaid (2013) *In vitro* evaluations of cytotoxicity of eight anti-diabetic medicinal plants and their effect on GLUT4 Translocation. Evidence Based Complementary and Alternative Medicine DOI: 10.1155/2013/549345.

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5. Sleman Kadan, Mahmoud Rayan and Anwar Rayan (2013) Anticancer activity of Anise (*Pimpinella anisum* L.) seed extract. The Open Nutraceuticals Journal DOI: 10.2174/1876396001306010001.

## Biography

Sleman Kadan is a PhD student at Al-Qasemi Research Center, Al-Qasemi Academic College, Baqa Algharbiya and Casali Center for Applied Chemistry, The Hebrew University of Jerusalem, Israel, where he finished his MSc in Chemistry on 2010. His PhD thesis title: Novel anti-diabetic natural drug candidates: Isolation, identification and characterization of the chemical structures and biomolecular mechanisms. He has so far published 6 refereed papers, 11 conference abstracts and he is a Coauthor of scientific book.

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