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Gundelia tournefortii anti-diabetic efficacy: Chemical composition and GLUT4 translocation

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In the present *in vitro* study, we tested the chemical composition, cytotoxicity and anti-diabetic activity of two Wild Artichoke-like Vegetable, *Gundelia tournefortii*, distinct extracts: Methanol and hexane. GC/MS phytochemical analysis of *Gundelia T.* methanol and hexane extracts revealed 44 compounds reported here for the first time in *Gundelia T.* out of the 50 detected compounds. Only Stigmasterol was present in both extracts. The efficacy of *Gundelia T.* extracts in enhancing glucose transporter-4 (GLUT4) translocation (fig. 1) 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 and hexane extracts were safe up to 250 µg/ml as measured with MTT and the LDH leakage assays. The methanol extract was the most efficient in GLUT4 translocation enhancement. It increased GLUT4 translocation at 63 µg/ml by 1.5 and 2 folds relative to the control in the absence and presence of insulin, respectively. These findings indicate that *Gundelia T.* possesses anti-diabetic activity in part by enhancing GLUT4 translocation to the PM in skeletal muscle.

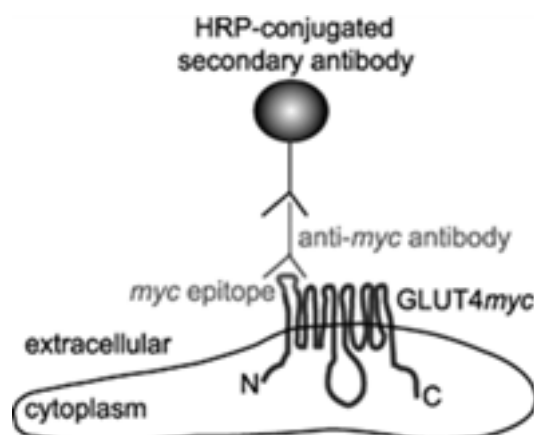


Fig.1. Model demonstrating the detection of the membrane insulin-responsive glucose transporter 4 (stably expressing myc-tag) -GLUT4myc.

Biography

Sleman Kadan is a PhD student at Al-Qasemi research center, Al-Qasemi Academic College, Baka Algharbiya and Casali Institute for Applied Chemistry, The Hebrew University of Jerusalem, Israel where he finished his M.Sc in chemistry on 2010. His PhD thesis title is "Novel Anti-Diabetic Natural Drug Candidates: Isolation, Identification and Characterization of the Chemical Structures and Biomolecular Mechanisms". Sleman have so far published 4 refereed papers, 3 conference abstracts and is a coauthor of scientific book.

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