GLUT4 TRANSLOCATION TEST FOR *PORTULACA OLERACEA*L.EXTRACTS: IN VITRO EVALUATIONS OF THEIR ANTI-DIABETIC ACTIVITY AND CYTOTOXICITY

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INTRODUCTION:

Portulaca oleracea L. (PO)is a grassy plant with a fleshy stem, succulent leaves, yellow or white small flowers and small black seeds. PO used as a medicinal plant in many countries, as a diuretic, febrifuge, vermifuge, antiseptic, anti-spasmodic, anti-bacterial, anti-inflammatory and anti oxidant. Morever, it has been used for mitigating a wide range of diseases including gastrointestinal diseases, respiratory disorders, liver inflammation, kidney and bladder ulcers, fevers, insomnia, inflammations and headaches. PO is known to regulate the sugar metabolism in the body.

Diabetes is a metabolic disease usually caused by a combination of hereditary and environmental factors, which result in hyperglycemia and other classical symptoms, especially polyuria, polydipsia and polyphagia. Eventually, hyperglycemia leads to serious damage in blood vessels.

The aim of this study was to evaluate the role of glucose transporter-4 (GLUT4) in the anti-diabetic effects of the aerial parts of *Portulaca oleracea*50% EtOH/water and methanol extracts.

MATERIALS AND METHODS:

The air-dried aerial parts of *Portulaca oleracea*were ground, 15 g of the powder were then packed in the thimble of the Soxhlet apparatus and were extracted with 150 ml methanol (MeOH), EtOH/water 50% , and then refluxed for 24 hours to give a dark green extract, Extract supernatants obtained were passedthrough a 0.2 μm filter and stored in aliquots at −80∘C forfurther experimental work.

The extracts anti-diabetic activity was examined by measuring the relative amount of GLUT4 translocation to the plasma membrane in the presence and absence of insulin. L6 muscle cells, stably expressing myc-tagged GLUT4, were utilized. These cells have been repeatedly shown to display insulin regulated GLUT4 traffic. L6 myoblasts were pre-treated with increasing concentrations of *Portulaca oleracea*extracts for 20h, followed by 3h serum-deprivation and insulin stimulation for 20 min and then GLUT4myc levels at the plasma membrane was determined. Toxicity of the extracts was determend by MTT and LDH leakage assays.

RESULTS AND DISCUSSION:

Cytotoxic and anti-diabetic properties of the extracts were evaluated using L6-GLUT4myc muscle cells stably expressing myc epitope at the exofacial loop (GLUT4). No cytoxic effects were observed in treated cells up to 0.25 mg/ml extract as measured with MTT and LDH-leakage assays. GLUT4 translocation to the plasma membrane was elevated by 2.5 and 4 folds (-/+ insulin) after treatment for 20 hwith *Portulaca oleracea*50% EtOH/water extract and 5 and 7 folds (-/+ insulin)with MeOH extract.

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