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Mechanism of anti-diabetic, lipid inhibition and anti-oxidant activity of palmatine via proteomics

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***Introduction*:** Our previous study has shown that Palmatine possess an anti-diabetic, lipid inhibition and anti-oxidant activity [1]. Our current research was aimed at evaluating the mechanism of action of anti-diabetic, lipid inhibition and anti-oxidant effect of Palmatine via Proteomics Approach.

***Method*:** In this study, Sprague Dawley rats were divided into: Normal, diabetic (negative) control, Palmatine (2mg/kg), Tolbutamide, (100mg/kg), 50 mg/kg of streptozotocin (STZ) was administered by intraperitoneal injection to induce diabetes; treatment was carried out for 12 weeks [2]. Two dimensional gel electrophoresis (2-DE) and mass spectrometer (Proteomics technique) were used to analyze the differential protein expression in the pancreas. Mass spectrometry (MS/MS), multidimensional protein identification technology (MudPIT) and protein database were used to identify the proteins that were differentially expressed in the pancreas[3]. A potential biological process, function of the identified proteins and protein-protein interaction network (PPI) was constructed using STRING database with minimal confidence of 0.150.

Results: The pIs and MW of the identified proteins correspond to protein homologous; Anionic trypsin-2 (Prss2), chymotripsinogen (ctrb1), heat shock protein a5 or Glucose regulated protein (Hspa5/GRP), Selenium binding protein (Selenbp1), Trypsin V-A, pancreatic amylase 2A3 (Amy2A3), Protein disulfide isomerase A2/A3 (PDI A2/A3), pancreatic lipase (Pnlip), enoyl coA hydratase (Echs1), Transforming acid coiled-coil protein 2 (Tacc2), Voltage-dependent anion channel protein 2 (vdac2), bile salt-activated lipase (cel), ATP synthase B, Lactoyl glutathione lyase (Glo1), zinc finger protein (znf22), and serum albumin (Alb).

Conclusion: Treatment with Palmatine caused the expression of lipase inhibiting; ATP stimulating, heat shock, lipid inhibiting proteins, and antioxidant proteins. PPI network analysis showed that the identified proteins are involved in the cellular components.

Reference:

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