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# Effects of Opuntia ficus-indica var. Saboten on Glucose Uptake and Insulin Sensitivity in Pancreatic β Cell

**Authors :** Kang-Hyun Leem, Myung-Gyou Kim, Hye Kyung Kim

**Abstract :** The prickly pear cactus (Opuntia ficus-indica) has a global distribution and have been used for medicinal benefits such as artherosclerosis, diabetes, gastritis, and hyperglycemia. However, very little information is currently available for their mechanism. The prikly pear variety Opuntia ficus-indica var. Saboten (OFS) is widely cultivated in Cheju Island, southwestern region of Korea, and used as a functional food. Present study investigated the effects of OFS on pancreatic β-cell function using pancreatic islet β cells (HIT cell). Alpha-glucosidase inhibition, glucose uptake, insulin secretion, insulin sensitivity, and pancreatic β cell proliferation were determined. The inhibitory effect of ethanol extract of OFS stem on α-glucosidase enzyme was measured in a cell free system. Glucose uptake was determined using fluorescent glucose analogue, 2-NBDG. Insulin secretion was measured by ELISA assay. Cell proliferation was measured by MTT assay. Ethanol extracts of OFS dose-dependently inhibited α-glucosidase activity as well as glucose uptake. Insulinotrophic effect of OFS extract was observed at high glucose media in pancreatic β-islet cells. Furthermore, pancreatic β cell regeneration was also observed.These results suggest that OFS mediates the antidiabetic activity mainly via α-glucosidase inhibition, glucose uptake, and improved insulin sensitivity.

**Keywords :** prickly pear cactus, Opuntia ficus-indica var. Saboten, pancreatic islet HIT cells, α-glucosidase, glucose uptake, insulinotrophic
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