

## عنوان مقاله:

In Vitro Investigation of the Anti-Diabetic Effects of Imperialine on Beta-TC $\beta$  Pancreatic and C $\gamma$ C $\gamma$  Skeletal Muscle Cell Lines

## محل انتشار:

فصلنامه گزارش های زیست فناوری کاربردی، دوره 8، شماره 4 (سال: 1400)

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## خلاصه مقاله:

**Introduction:** Imperialine (Imp) is a steroidal alkaloid present as the main active constituent of medicinal herb, *Fritillaria imperialis* with many biological and therapeutic effects. However, it has not been investigated in vitro for hypoglycemic effects. Herein, the effects of Imp on cell survival, carbohydrate-hydrolyzing enzymes (alpha-amylase and alpha-glucosidase), glucose uptake ability, insulin secretion levels, Advanced Glycation End products (AGEs) including pentosidine, methylglyoxal, and 3-deoxyglucosone levels and the activity of glyoxalase I as the main factor for degradation of AGEs were examined. **Materials and Methods:** C $\gamma$ C $\gamma$  skeletal muscle and beta-TC $\beta$  pancreatic cells were incubated with Imp at concentrations of 0, 25, 50, 75, and 100  $\mu$ g/ml and the cells were evaluated separately. The biological assays were based on ultraviolet-visible (UV/VIS) spectrophotometric and/or high-performance liquid chromatography (HPLC) methods. **Results:** Imp had considerable and dose-dependent effects on glucose uptake and insulin secretion ( $P < 0.05$ ). The highest levels of glucose uptake were achieved at a concentration of 100  $\mu$ g/ml of Imp. Increased glycation index, cytotoxicity, and decreased glyoxalase I activity appeared mostly at concentrations of 75  $\mu$ g/ml and higher. The studied alkaloid demonstrated remarkable hypoglycemic effect by inhibition of alpha-amylase and alpha-glucosidase. **Conclusions:** Consequently, the results of the present study revealed possible hypoglycemic effects of Imp and it could be suggested for future studies in the treatment of diabetes mellitus.

## کلمات کلیدی:

Advanced glycation end products, Glucose Uptake, Imperialine, Insulin Secretion

## لینک ثابت مقاله در پایگاه سیویلیکا:

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