

# Effect of methyl- $\beta$ -cyclodextrin complexation on the hypoglycemic and hypolipidemic effects of khellin

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## Abstract

**Objective:** The present work tackled the development and evaluation of inclusion complex of khellin (KH) and methyl- $\beta$ -cyclodextrin (M $\beta$ CD). In addition, it tested its possible hypoglycemic and hypolipidemic effects. **Methods:** Inclusion complexes of KH-M $\beta$ CD in the presence of water-soluble polymer were prepared by freeze drying (FD), co-evaporation (EV) and kneading methods (KN). The selected ternary complex was characterized by Fourier transform infrared spectrophotometry (FTIR), x-ray diffractometry (XRD), differential scanning calorimetry (DSC) and scanning electron microscopy [1]. Assessment of the hypoglycemic effect of the selected ternary complex versus the standard drug metformin was studied. Two different doses of the ternary complex were administered orally to streptozotocin (STZ)-induced type 2 diabetic rats. Their hypoglycemic and hypolipidemic effects were evaluated by measuring the fasting blood glucose level (BGL), total cholesterol (TC) and triglycerides levels (TG) along the study period. **Results:** The FD complex showed the highest drug dissolution rate. All the performed characterization analysis confirmed the formation of a KHM $\beta$ CD inclusion complex. The in vivo study declared that both doses showed a marked hypoglycemic and hypolipidemic effects compared to metformin. **Conclusion:** In conclusion, this study points for the first time that the complexation of KH with M $\beta$ CD could notably improve the dissolution rate and hence the bioavailability of KH. Moreover, this study demonstrated that this compound has a hypoglycemic and hypolipidemic effect. Thus, it can

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