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## Current Drug Delivery

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Isolation, Characterization and Study of Enhancing Effects on Nasal Absorption of Insulin in Rat of the Total Saponin from *Acanthophyllum squarrosum*  
pp.399-404 (6) Authors: S.A. Sajadi Tabassi, H. Hosseinzadeh, M. Ramezani, E. Moghimipour, S. A. Mohajeri

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### Abstract

**OBJECTIVE:** Isolation of the total saponins from *Acanthophyllum squarrosum* Boiss. and investigation of its surface activity, haemolytic effects on human erythrocytes as well as enhancing potentials on intranasal insulin absorption in rat in comparison with two other enhancers i.e. Quillaja total saponin (QTS) and sodium cholate (SC).

**MATERIALS AND METHODS:** The decrease in blood glucose levels in five fasting rats following nasal administration of regular insulin solutions in the presence or absence of enhancers was determined by glucometric strips and used as an indication of insulin absorption.

**RESULTS:** The results showed that ATS decreased surface tension of water to about 50 dyne.cm<sup>-1</sup> and caused complete haemolysis of human RBCs at a concentration of 250 µg.ml<sup>-1</sup>. Following the instillation of solutions containing insulin and different absorption enhancers into the right nostril of rats, the percentage decrease in initial blood glucose was as follows: 72.46% (± 2.39%) for ATS, 63.22% (± 11.06%) for QTS and 60.06% (± 14.93%) for SC. Percentage lowering in initial blood glucose concentrations against time showed that ATS exhibits a stronger effect than the two other enhancers although the difference was not statistically significant ( $p > 0.05$ ).

**CONCLUSION:** ATS has a considerable absorption enhancing effect and can possibly be used to increase insulin bioavailability via nasal route. However the potential toxic effects of this saponin on nasal mucosa should be further evaluated.

**Keywords:** Saponin, Absorption enhancers, *Acanthophyllum*, Insulin

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