

Fenugreek (*Trigonella foenum graecum*) leaves extract and its interaction with heavy metal (Nickel II) with reference to glucose reduction capabilities *in-vitro*.

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Abstract

Introduction: Heavy metals like nickel may be considered as one of the important industrial hazard which is found to induce diabetes mellitus among people who are exposed to it. It is found to alter the insulin response.

Objectives: To evaluate the glucose reduction capabilities of aqueous extract of fenugreek (*Trigonella foenum graecum*) leaves and its interaction with nickel at pH 7.0 and 9.0 *in-vitro*.

Materials and Methods: Spectral analysis of Ni (II) alone and in presence of fenugreek extract was recorded at pH 7.0 and pH 9.0 using UV-Vis spectrophotometer at room temperature of 25^o C. Glucose reduction capabilities of aqueous extract of fenugreek leaves alone and in supplementation with nickel sulphate were also evaluated at pH 7.0 and 9.0 by glucose oxidase method.

Results: The λ_{max} value of Ni showed hypsochromic shift from 393.5 and 396.5 to 323.5 and 323.0 at pH 7.0 and pH 9.0 respectively in the presence of aqueous fenugreek extract. The aqueous extract of fenugreek leaves has produced significant reduction in the glucose concentration at pH 7.0 and pH 9.0 even in presence of heavy metal like Ni (II) *in-vitro*.

Conclusion: The aqueous extract of fenugreek leaves is capable to change the chemical behaviour of heavy metals like Ni. The study also revealed a strong glucose reducing properties of fenugreek with or without nickel supplementation *in vitro*. Interestingly such glucose reducing characteristics were found to be higher in alkaline medium (pH 9.0).

Keywords: Nickel, fenugreek (*Trigonella foenum graecum*) extract, pH alterations, glucose reduction.
