national centre for cell science

An Autonomous Institution of the Department of Biotechnology, Govt. of India

Technology capabilities for:

Fenugreek derived processes and products for metabolic diseases

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About the clinical need/ problem(s)

Description of the unmet need(s), outstanding problem(s) in literature etc.

- Current treatment of metabolic diseases are expensive, have untoward side effects and inflict economic burden.
- Fenugreek seeds supplements are nontoxic
- Have been shown to suppress increase of plasma glucose and lipids.

What is the problem being solved.

- Fenugreek Seeds and its extract are rich in proteins and are widely studied for their assumed medicinal properties in the treatment and prevention of several human diseases including metabolic diseases at a dose of **25-50 g/day.**
- However, considering the pungent odor and bitter taste of fenugreek seeds, the dose used in those studies may not be clinically feasible

How important or big is the need?

- Herbal treatments are effective and highly lucrative in the international marketplace
- Developing Nations: 80% population depends on traditional medicine for primary health care.
- Developed Countries: Over 50% of the population use some form of alternative medicine(http://www.who.int/mediacentre/factsheets/2003/fs134/en/)

Why solving this will have an impact?

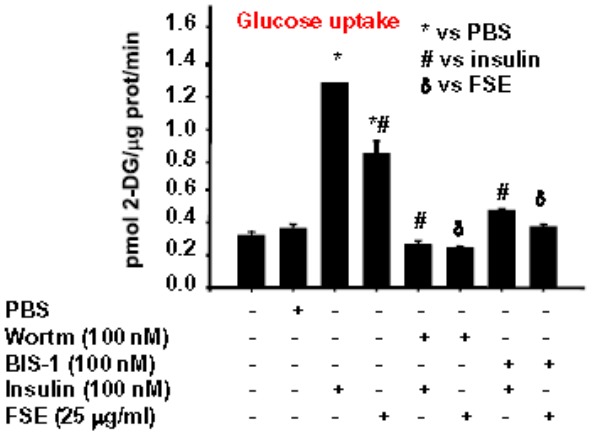
- Global market forecast US$93.15 billion by 2015
- Indian herbal exports market shows over 20% for herbal raw materials and 25% for herbal medicines (currently at USD 0.3 B & USD 1.9 B respectively)

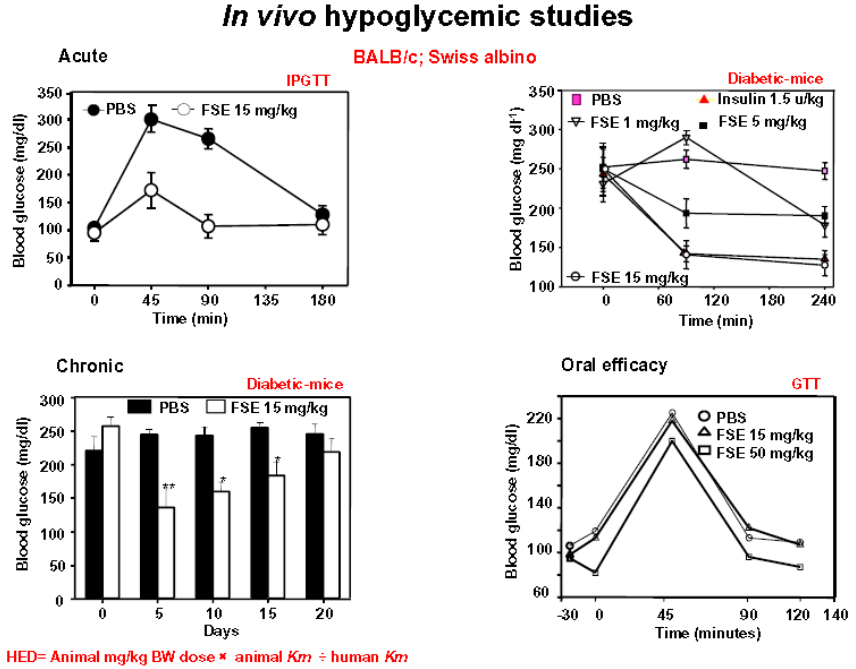
The solution(s)

The solutions that has been developed/ studied/ proven.

We have come up with a preparations that would be reasonably convenient for human consumption. The extracts exhibits glucose and lipid lowering effects in animals at human equivalent dose of **75-150 mg/day.**

Product 1: Method of preparing dialyzed extract of fenugreek seeds





PATENTS GRANTED

Bhat MK and Vijayakumar MV: Method of preparing dialyzed extract of fenugreek seeds. **US Patent No. US8865237 B2.**

RELEVANT PUBLICATIONS

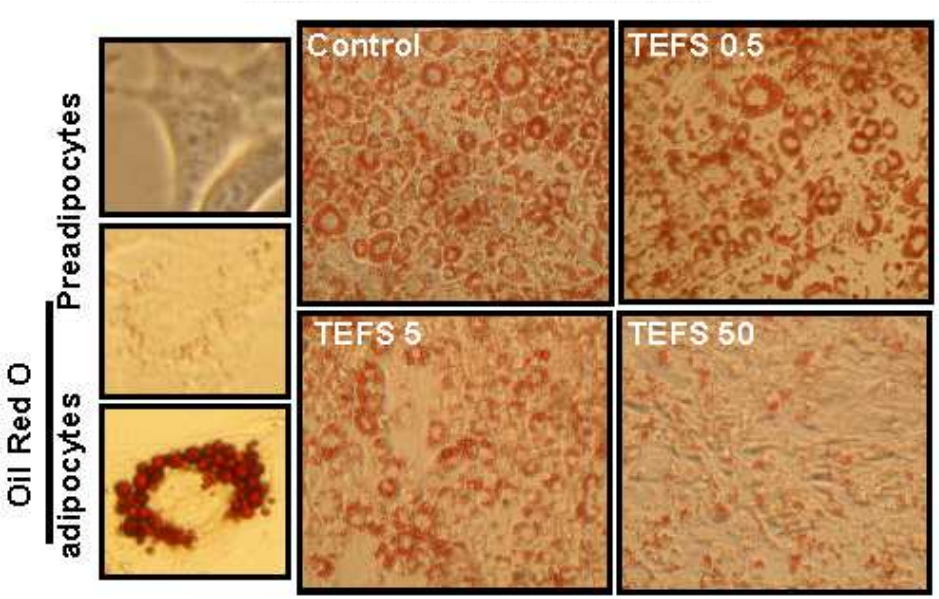
Vijayakumar MV, Singh S, Chhipa RR and Bhat MK: The hypoglycaemic activity of fenugreek seed extract is mediated through the stimulation of an insulin signaling pathway. **British Journal of Pharmacology, 2005, 146:41-45.**

Vijayakumar MV and Bhat MK: Hypoglycemic effect of dialyzed fenugreek seeds extract is sustainable and is mediated, in part, by the activation of hepatic enzymes. **Phytotherapy Research**, **2008, 22:500-525**.

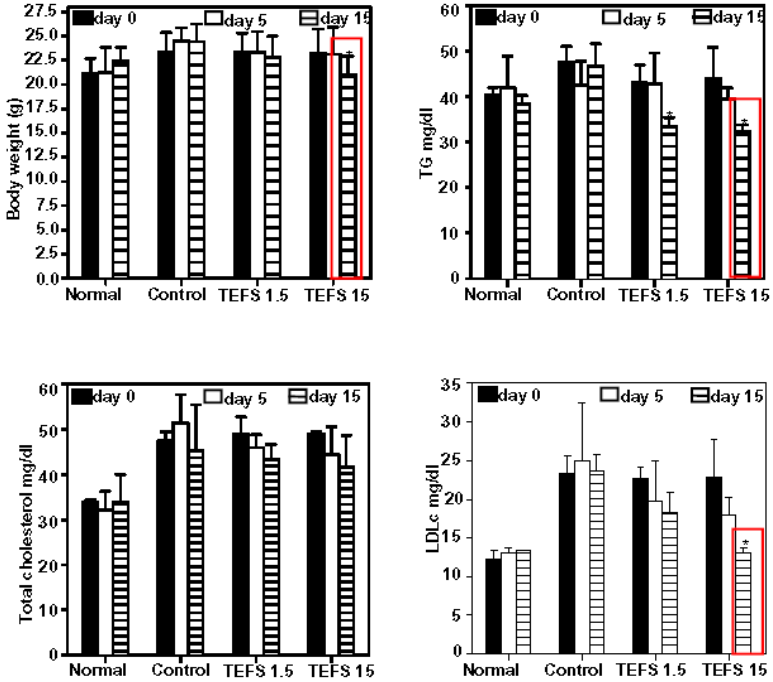
Vijayakumar MV, Ajay AK, Bhat MK. Demonstration of a visual cell-based assay for screening glucose transporter 4 translocation modulators in real time. **J Biosci. 2010, 35:525-531.**

Product 2: Protein based product from fenugreek seeds that regulates dyslipidemia and obesity, and a process for the preparation thereof

Hypolipidemic studies in vitro



Effects on body weight and serum chemistry profile of C57BL6/J mice exposed to fat supplements



PATENTS GRANTED/APPLIED FOR

Bhat MK, Pandey V and Vijayakumar MV: Protein based product from Fenugreek Seeds that regulates dyslipidemia and obesity, and a process for the preparation thereof. **International Application No. PCT/IN2008/000877**;

Granted European PATENT NO. 2,323,676

RELEVENT PUBLICATION

Vijayakumar MV, Pandey V, Mishra GC and Bhat MK: Hypolipidemic effect of fenugreek seeds is mediated through inhibition of fat accumulation and upregulation of LDL receptor. **Obesity, 2010, 18:667-674.**

TECHNOLOGY TRANSFER: Know-how related to fenugreek products to Indus Biotech Pvt. Ltd., Pune, India.