Isolation and characterization of luteolin, naphthoic acid and triterpenic derivatives from *Garcinia indica* fruits

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Abstract (300 words only)

Statement of the Problem: Obesity related diabetes, a health issue of the Western society, are on rise in India. Although the first line of prevention/treatment approach is diet, exercise, and lifestyle modifications, these often pose a challenge to implement in practice or alternatively drug intervention. Several of currently used agents are limited by their mechanism of action, side effects, compliance and associated complications after the cessation of the drug. Compounds from natural sources have been used for the treatment of a wide range of illnesses. The aim of this study was to isolate compounds from the fruits of the plant *Garcinia indica*, a known anti-obesitic drug in Ayurveda.

Methodology & Theoretical Orientation:

Fruits of *Garcinia indica* were procured from local crude drug market and authenticated using WHO guidelines. The material was extracted with methanol till exhaustion using soxhelet and filtered. The extracts was then be re-dissolved in distilled water and partitioned with hexane and ethyl acetate. The ethyl acetate fraction was chromatographed by gradient elution over normal phase silica gel G using MPLC. The aliquots were collected and evaporated to dryness using a rotary evaporator. Fraction with similar TLC profiles were combined to yield pooled fractions. To purify compounds, co-solvency, heating, evaporation and crystallization methods were used. Pancreatic lipase- a validated drug target for anti-obesity - was used in *in-silico* studies. ADMET study was also done.

Conclusion & Significance:

MPLC based separation resulted in isolation of luteolin, napthoic acid and triterpenic glycoside derivatives. The compounds were characterized on the basis of extensive spectroscopic data analysis. Luteolin and galangin in *in-silico* studies revealed good activity.

Image:

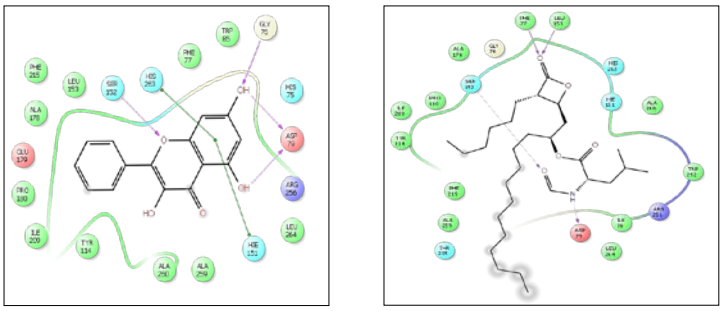


Figure: Schematic diagram 2D left (Galangin) and 2D right (Orlistat) inside the pancreatic lipase receptor pocket (PDB ID - 1LPB). Galangin is showing key hydrogen bond interaction with Asp 79, Gly76, and Ser152 (*purple colour dash line*) and π-π stacking with Hie151 and His 263 (*green colour solid line*).

Recent publications:

1. Basri AM, Taha H, Ahmad N (2017). A review on the Pharmacological Activities and Phytochemicals of *Alpinia officinarum* (Galangal) Extracts Derive from Bioassay-Guided Fractionation and Isolation. Pharmacognosy Reviews. 11(21):43-56.
2. Buchholz T, Melzig MF (2015). Polyphenolic Compounds as Pancreatic Lipase Inhibitors. Plant Medicine. 81:771-83.
3. Suresh VN, Esakkidurai, Pitchumani K (2015). Identification and quantification of Phenolic Compounds in *Alpinia galanga* and *Alpinia calcarata* and its relation to Free Radical Quenching Properties: A Comparative Study. Journal of Herbs, Spices & Medicinal Plants. 21:140-147.
4. Kaushik D, Yadav J, Kaushik P, Sacher D, Rani R (2011). Current pharmacological and phytochemical studies of the plant *Alpinia galanga*. Journal of Chinese Integrative Medicine. 9:1051-1054.
5. Chudiwal AK, Jain DP, Somani RS (2010). Alpinia galanga Wild – an overview on phyto-pharmacological properties. Indian Journal of Natural Products and Resources. 1(2):143-149.

Biography:

I, Kavita Munjal, Ph.D Research Scholar at Jamia Hamdard University, New Delhi, India, take this opportunity to forward my abstract which relates to my Ph.D work only. I am moving with the aim of identification/ isolation of phytocompounds from the plants which will interfere with the inflammatory mediators against obesity and diabetes and improve the therapeutic effect with lesser side effect and cost effectiveness. My laboratory at Department of Phytochemistry and Pharmacognosy, Jamia Hamdard is highly sophisticated with advanced technologies associated with the evaluation of therapeutic potentials of the life Style diseases like diabetes and obesity. Earlier my Post graduate work also involved the same kind of research based on natural compounds from plants. The

patenting in the international level of our Indian products from this basic evidence study can be an added advantage to our economy. This conference relates to herbals only, so this may help me to get exposure of technological and methodological concepts of modern science currently.

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