

International Conference and Exhibition on

Marine Drugs and Natural Products

July 25-27, 2016 Melbourne, Australia

Grilling increases the gastroprotective potential of *Terminalia bellerica* fruits: Validation of an ethnobotanical lead from Uttarakhand, India

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The survey was conducted in Tharu and Buxa (tribes) dominated villages of Udham Singh Nagar, Uttarakhand, India. It was found that the natives of these villages use grilled fruits of *Terminalia bellerica* as an effective cure for diarrhea and stomach ulcers. We compared the anti diarrheal effect of grilled fruits (GF) with dried fruits (DF). Total phenol, flavonoid and tannin content was 122.22 mg GAE/g, 47.2 mg QE/g and 28.5 mg GAE/g in DF while 164.30 mg GAE/g, 57.2mg QE/g and 46.3 mg GAE/g sample in GF respectively. A 50% ethanolic extract of DF and GF was fractionated and ethyl acetate fractions showed potential DPPH free radical scavenging (IC₅₀ 11.13 µg/ml in DF and 8.56 µg per ml in GF), anti-lipid peroxidation and antibacterial activity. The non targeted metabolic profiling showed higher content of tartaric acid, valeric acid, succinic acid, oxalic acid, malonic acid, malic acid, 1,2,3 trisbenzene, uridine and 11-eicosenoic acid in GF. The chromatographic studies confirmed that gallic acid content was 2.8 (±0.14) and 4.92 (±0.28) mg/g while ellagic acid content was 4.7 (±0.32) and 4.45 (±0.45) mg/g dry powder in DF and GF respectively. *In vivo* anti diarrheal activity showed that DF and GF (100 mg/kg oral) inhibited diarrhea by 41.87% and 71.72% respectively. In aspirin induced, pylorus ligation induced and ethanol induced ulcer models, GF showed significant ulcer inhibition (p<0.05-0.001). There was an increase in anti-inflammatory cytokine IL-10 and reduction in pro-inflammatory cytokines TNFα and IL-6 concentration in rats treated with GF and DF. The study indicated that grilling significantly altered the levels of metabolites in *T. bellerica* fruits which could be responsible for increased therapeutic potential of GF.

Biography

Garima Pandey has completed her PhD from the University of Lucknow and is presently working as a Research Associate at CSIR-National Botanical Research Institute, Lucknow. She has an extensive work experience in the field of Traditional Medicine with major focus on integration of traditional knowledge with state of the art science. She has 23 papers published in journals of repute and has a patent filed to her name. She has won various awards; best speaker at conference organized by Association of Ayurvedic Practitioners of North America and Best Poster Award at the International Conference on Medicinal Plants, organized by CSIR-CIMAP, to name a few. She is an active member of the International Society of Ethnobiology and holds a position in the editorial board of two reputed journals in the field of pharmaceutical science.

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