Khushboo Gandhi, Nat Prod Chem Res 2015, 3:6
http://dx.doi.org/10.4172/2329-6836.C1.008

OMICS International
conferenceseries.com

3rd International Conference and Exhibition on
Pharmacognosy, Phytochemistry & Natural Products
October 26-28, 2015 Hyderabad, India

Polymeric black tea polyphenols inhibit aryl hydrocarbon receptor-mediated activation of CYP1A1 and CYP1A2 transcription and DNA adduct formation in mouse skin: Mechanism of their anti-initiating action

Khushboo Gandhi
Anand Pharmacy College, India

Background: Dietary and phytochemical intervention are emerging as an important modality for cancer chemoprevention. Polymeric Black Tea Polyphenols (PBPs) are the most abundant polyphenols in black tea but the anti-initiating properties of PBPs are poorly elucidated. In the present study, the mechanism of PBPs-mediated anti-initiation was investigated in mouse skin employing benzo[a] pyrene (B[a]P) as a carcinogen.

Methods: Animal studies were conducted after approval from the Institutional Animal Ethics Committee as per the Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA, Government of India) guidelines (Protocol No-13/2010, dated-March 28, 2012). On the dorsal skin of Swiss bare mice topical pre-treatments with acetone (vehicle, 100 µl) or P3/P5/Pm (200 µg in 100 µl acetone) was carried out on three consecutive days. On the third day 20 minutes after topical application of acetone/P3/P5/Pm, animals were topically treated with B(a)P (1 mg, 100 µl acetone) and 24 hours after the last application animals were sacrificed, skin was removed and stored at -80o C. Expression of Phase-I enzymes (CYP1A1 and CYP1A2) and their transcriptional regulators AhR (Aryl Hydrocarbon Receptor), AhR nuclear translocator (ARNT), XAP-2 and HSP90 were studied by western blotting. Phase-1 Enzyme activity was studied by spectroflourometry and mRNA levels were checked with RT-PCR. Phosphorylation of AhR and association of AHR: ARNT was evaluated by immuno-precipitaton as well as binding of AHR to XRE was checked by EMSA and DNA adducts formation by immunohistochemistry. Simultaneously, PGE2 levels and DNA damage were studies by ELISA.

Results: Pretreatment of mice with PBPs significantly decreased B(a)P-induced enzyme activity, mRNA levels and protein levels of cytochrome P450 1A1 and 1A2. Although alone PBPs did not alter the basal levels of AhR, it significantly diminished the B(a)P-induced AhR levels, nuclear translocation, subsequent binding to DNA and ARNT. Pre-treatment of PBPs also significantly inhibit B(a)P-induced DNA adduct formation, level of PGE2 and 8-oh-dG in mouse skin.

Conclusions: Black Tea polyphenols exhibit their anti-initiation activity via modulation of AhR, which is a transcriptional regulator of phase-I enzyme and subsequently by decreasing DNA adducts.

Biography

Khushboo Gandhi completed Bpharm, Mpharm and she is pursing PhD in Anand college of Pharmacy

jiyasharma0603@gmail.com

Notes: