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ABSTRACT

Food can modulate various functions in the body and the bioactive compounds of plant origin foods have reported for their potential health beneficial role. Now a day, Bangladesh faces life style and diet related chronic diseases. For the prevention and management, advanced research is needed to identify the potential functionality of indigenous foods of Bangladesh. Therefore, the present study was undertaken to screen 41 selected indigenous foods of Bangladesh, included vegetables(14), fruits(6), oil seeds(5), spices(6), legumes(5), tea(4) and cereal(1).

Freeze-dried samples were extracted by dimethyl sulfoxide (DMSO) and sequential extraction by hexane/dichloromethane (1:1) and AWA (acetone/water/acetic acid 70:29.5:0.5). Anti-oxidant activities were measured by hydrophilic oxygen radical absorbance capacities (H-ORAC$_{FL}$) of AWA and lipophilic ORAC^{FL} (L-ORAC$_{FL}$) of hexane/dichloromethane fraction. Total phenol (TP) content was measured by modified Folin-Ciocalteau method. DMSO extracts were used to evaluate the anti-inflammatory (estimated by LPS-induced TNF-α, inflammatory cytokine produced in early phase of inflammation, production on J774A.1 cells) and anti-allergic (antigen-induced degranulation of RBL-2H3 cells) activities.

Tea samples showed high H-ORAC$_{FL}$ values (1346 -2510 µmol of Torolox equivalent (TE)/g). H-ORAC$_{FL}$ values of the fruits ranges from 0.45 to 168.9, with very low L-ORAC$_{FL}$ activity. Spices showed both higher H-ORAC$_{FL}$ (70.41-272.82) and L-ORAC$_{FL}$ (29.75-1575.24) values than those of fruits. . Linear correlation was observed between H-ORACFL and TP content among some vegetables, fruits and tea samples, except Indian apple and Alma.

Fourteen samples inhibited TNF-α production at the concentration of 40µg/mL. Among them, activities of linseed (32.3 %), china (48.85), kheshari (48.59), radhuni (49.91), cabbage (54.21), black tea (53.4) and sesame-black variety (57.5) were potent. On the other hand, spinach (290.9 %), okra (261.2), bitter gourd (235.4) and guava (155.7) enhanced TNF- production at the same concentration. Dose response study the inhibition of TNF-α production (40, 10, 3 & 1µg/mL) showed that two spices, green tea, tea org., sesame (black), mustard (yellow), green gram and lentil seems to have dose-response. Concerning anti-allergic activities, kalojira(46.93% of negative control), china(57),eggplant(61.4),cabbage (65.8), papaya(69.1), amla(73.3) and four different type of tea (60.9-83), inhibited the antigen-induced degranulation of RBL-2H3 cells at the same concentration. DMSO and AWA extract of kalojira showed positive dose response on 5, 10, 20 & 40 µg/ml of final concentration.

In present study, 41 foods have been investigated to find out the health beneficial effect. Further studies are needed for the confirmation of effect in vivo, isolation and elucidation of the structures of bioactive compounds and also identify the mechanism of action for their health beneficial role.