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Free radicals scavenging, antihyperglycemic and antihyperlipidemic activities in vegetable's peel

Ambati Anusha Raju, Katta Archana, Srishti Shukla, Dommati Anand Kumar, Amtul Zehra and **Ashok Kumar Tiwari**
CSIR-Indian Institute of Chemical Technology, India

Vegetables and their juice help in maintaining imbalance in glucose and lipid metabolism and preserving antioxidant defence, however, many times they are consumed after peeling. Role of vegetable's peel in maintaining glucose and lipid metabolism and antioxidant defence is not well explored. Antioxidative, antihyperglycemic and antihyperlipidemic activity was evaluated *in vitro* in vegetable's peel extract. Total polyphenol, flavonoid and anthocyanin content were measured. The 2, 2-diphenyl-1-picrylhydrazyl (DPPH); 2, 2-Azinobis (3-ethyl benzthiazoline-6-sulphonic acid) ($ABTS^{\cdot+}$); nitric oxide scavenging and nitroblue tetrazolium reducing, advance glycation end products (AGEs), intestinal α-glucosidase, porcine pancreatic lipase and protein-tyrosine phosphatase 1β (PTP 1β) inhibitory activities were examined. Peels are rich in polyphenols, flavonoids and anthocyanins and displayed varying degrees of free radicals scavenging potentials. Extract of *Luffa acutangula, Cucumis pubescens* and *Cucumis melo* var. *chito* inhibited both, vesperlysine-type and pentosidine type-AGEs formation. *Momordica charantia* peel could inhibit only vesperlysine type-AGEs formation. *Cucumis pubescens* and *Cucumis melo* var. *chito* peel displayed pancreatic lipase and *Momordica charantia* peel, intestinal α-glucosidase inhibitory activity. Peel extracts also displayed protein-tyrosine phosphatase 1β (PTP 1β) inhibitory potentials. PTP 1β inhibitory activity was found associated with $ABTS^{\cdot+}$ and DPPH radical scavenging activities. Vegetables' peels are rich source of antioxidant activities and can slow down postprandial hyperglycemia and hyperlipidemia by inhibiting intestinal α-glucosidase and pancreatic lipase respectively. Phenomenon of insulin and leptin resistance can be tackled by their PTP 1β inhibitory activity. Therefore, consumption of these vegetables along with peel is more healthful than consuming without peel.

ambati.anusha73@gmail.com
katta.archana.goud@gmail.com

The expression of rat serine/threonine protein kinase A-Raf is down-regulated in primary liver cancer

Maryam Ranjpour, Saima Wajid and **S K Jain**
Hamdard University, India

Liver cancer is globally associated with very high mortality. Delayed diagnosis and lack of effective treatment are responsible factors affecting its survival rate. In our research for biomarkers that can diagnose HCC, we developed an animal model of chemically induced liver cancer using DEN and AAF as the inducer and promoter of HCC. The progression of disease was monitored by histopathological evaluation. The differentially expressed proteins in sera of treated animals vis-a-vis control animals were analyzed by PDQuest, MALDI-TOF and LCMS. We identified few proteins that have potential for development of biomarkers for early detection of HCC. We report that the expression of serine/threonine protein kinase A-Raf is down-regulated at very early stage of cancer development. The down regulation has a co-relation with progression of the disease. Real-time PCR analysis of RNA confirmed it's down regulation. The effect is at transcription level. Real-time PCR data and Western blot analysis data show that the transcriptomic and proteomic analysis supplement each other. These data suggest that serine/threonine protein kinase A-Raf has strong potential for development of an early diagnostic and prognostic marker for HCC.

maryam_o2001@yahoo.com