Conceptual Editorial

Wild fruits: nutritional and nutraceutical opportunities

Wild fruits are valuable source of food and medicines for domestic and commercial purposes which have got significant cultural and socio-economic value in rural areas of Himalayan region. These fruits have been considered as important source of food for mankind before the dawn of civilization and the domestication of the present day fruits. Among various wild fruit sources some of them including wild pomegranate (*Punica granatum* L.), chilgoza nut (*Pinus gerardiana* Wall), Indian horse chest nut (*Aesculus indica* Colebr.), box myrtle (*Myrica nagi*), mulberry (*Morus alba* L.), seedling mango (*Mangifera indica* L.), wild aonla (*Phyllanthus emblica* L.), wild prickly pear (*Opuntia dellinii* Haw.) are widely available in the vast tract of hilly slopes in the forest from 800 to 3300 m elevations. These wild fruits provides many essential nutrients which helps to improve both the physical and mental well-being of human being. These fruits as fresh or processed form are made available in the urban markets at higher rates because of their wild origin as compared to commercial. *Anardana* from wild pomegranate, chilgoza nuts, *edible flour* from Indian horse chest nut, amchur and oil pickle from seedling mango fruits are some of traditional products from these wild fruits. Besides this,other parts of fruits like wild pomegranate peel after *anardana* preparation is being used in various pharmaceuticals preparations. However, traditionally dried wild pomegranate peel powder with honey is also utilized by local rural peoples for the treatment of cough and other ailments.

Although the commercial fruits contain various nutrients but wild fruits have been found more nutritious with respect to some of the essential nutrients including some phytochemicals. Among these fruits, seedling mango and wild aonla contains high fiber content, box myrtle, wild pomegranate and mulberry are rich sources of anthocyanin pigments. Wild aonla, prickly pear and wild pomegranate are rich sources of vitamin C, while prickly pear contains very high amount of betalains as betacyanins and betaxanthins besides good amount of pectin. Besides this wild fruits have been found to contain higher amount of polyphenols which are largely recognized as anti-inflammatory, antiviral, antimicrobial and antioxidant agents. These constituents are essential for normal physiological well-being of human being and help in maintaining healthy state by preventing various disorders and diseases. Phytochemical investigations have attracted great deal of attention in recent years because of their role in preventing various diseases.

Most of the wild fruits are seasonal and are available for very short period because of their short shelf-life, so consumed as fresh or sometimes processed traditionally. To explore this emerging area of nutritional and nutraceutical opportunities, we have been working in this area during last decade with respect to their nutritional quality evaluation and development of various value added commercial products viz. *anardana*, dried chilgoza nuts and various high antioxidant beverages and other products from these wild fruits. We are focusing on the utilization of their processing waste for the extraction of bioactive compounds like pectin, fiber and natural antioxidants as anthocyanins and polyphenols which can further be utilized for the development of various nutraceutical and functional foods. Currently we are also working on the extraction and characterization of phenolic antioxidants from wild fruits and their utilization for the development of nutraceutical and functional foods. Polyphenols can be used not only for the development of various functional foods but for the nutritional enrichment of various food products also. Therefore, extraction of the bioactive compounds from wild fruits and their utilization by linking them with specific mechanisms of action and health effects holds promise for future therapeutic development from natural products. So, after extraction of these bioactive compounds, not

only be utilized for the production of nutraceuticals, functional foods but also for the development of dietary supplements to fulfill certain nutritional requirements. Hence, these fruits can be successfully utilized for the preparation of variety of quality and nutritionally enriched processed products. However, different factors such as abundance, availability, cultural preference, economic conditions, short shelf life and unsecure food production systems may affect preference and use of the various wild fruits.

Wild fruits will therefore offer opportunity for economic diversification and nutrition to people throughout the year by developing various nutritional enriched products at remunerative price. These wild fruits will also play a very vital role in supplementing the diet of the people. Focus on the studies related to nutritional and phytochemicals can lead to encourage the increased consumption of these wild fruits in future. At present, only a fraction of total potential is being tapped by local inhabitants without knowing their nutritional importance. These species are needed to be domesticated for further utilization in nutraceutical preparations and development of antioxidant rich products. In order to achieve the goals to improve the living conditions, more regions needs to be brought under this type of study and more research work related to nutritional and phytochemicals composition should be initiated in wild edible fruits so that they can be recognized for their various health benefits. There is a need to recognize these fruits and their value added products in the local/ national or international market. In general, future contemplations on wild edible fruits around the globe need to be studied at forefront by involving local indigenous communities. It reflects the feasibility for the development of some diversified value added products from some of the wild fruits found in Himalayan region in order to minimize the wastage, to promote these products as export items and to uplift the nutritional and socio-economic status of the vulnerable communities of the country. It is also important to analyze the market environment for these fruits and their products for their wider acceptability. So, these wild fruits have great potential in future for the development of various functional/nutraceutical food products having various health benefits including prevention and treatment of various diseases.

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