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### Changing strategies in natural product research

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At present, out of recorded flora, not even 10% has been subjected to scientific investigations. So majority of flora has remained untapped. In our search for bioactive compounds, we have directed our attention to underutilized plant products such as cashew nut shell liquid (CNSL), a waste by-product from cashew industries. In traditional medicine, it is reputed to have wound healing properties. Bioassay-directed fractionation of CNSL, led to isolation of the active principle, anacardic acid. It inhibits catalytic activity of matrix metalloproteinases-2 and -9. Phytoecdysteroids (PEC) are high value chemicals with multifarious bioactivities. PEC was isolated from the halophytic weed, *Sesuvium portulacastrum*. It has been found to have wound healing activity, improves lipid metabolism and has immunomodulatory properties and effects on central nervous system. Application of PEC on the host plants has resulted in significant increase in yield of silk fibre. Methods have been developed for easy eco-friendly methods for isolation of PEC. Characterization and quantization of PEC was done by non-biological procedure using TLC, HPLC and LCMS/MS. Complex mixtures of phenolics from the Indian varieties of seabuckthorn (*Hippophae* species) were separated by preparative HPLC and characterized by UV spectroscopy and LC-MS. The most common flavonoid, quercetin and related compounds were isolated from the kitchen waste (outer peels of onion, *Allium cepa*). Flavonoids are recognized as some of the best antioxidants and have been studied for their gastro-protective effects, inhibition of carcinogenicity, reduce risk of cataract, inhibit inflammatory leukotriene, radioprotection. Large quantities of flowers are available from the offerings in temples in India. Quercetagenin was isolated from common flowers, *Tagetes erecta*. It is an ATP-competitive flavonol inhibitor of PIM1 kinase. Gossypin, gossypetin, hibifolin were isolated from the flowers of Hibiscus sp. Gossypin has many biological properties, such as antioxidant, anti-inflammatory and anticancer, antiviral activity. Recently hibifolin has been found to prevent beta-amyloid-induced neurotoxicity. During the course of investigations, besides isolation of bioactive compounds, new eco-friendly methods for isolation of natural products were developed. Identification and characterization of complex mixture were carried out by preparative HPLC, without recourse to elaborate separation procedures. Characterization was done by UV and MS spectroscopy. The studies reveal that there is good potential of isolating important bioactive products from underutilized plant products such as kitchen waste and flowers waste (viz. from temples). The details of the procedures developed for isolation and characterization without recourse to elaborate separation will be presented.

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