

Wild Relative Genetic Resources for nutraceutical traits in Vegetable crops

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Abstract

Vegetables are power house of essential nutrients. Wild Relative Vegetable Genetic Resources key source for several desirable donor genes and high bioactive compounds which can be explored breeding programme. The wild spp/ wild relatives being richest sources of nutraceutical compounds such as Macro elements, Micro elements and Antioxidants can be explored in crop improvement programmes through wild hybridizations and also through both conventional and biotechnological approaches. In identification of QTLs and markers associated with the nutraceutical compounds for further use in marker assisted breeding. Thus, wild vegetables species have an important role to play in meeting the challenges for the twenty-first-century agriculture, in facing adverse effects of climatic changes and in finding solution to food and nutritional security pressure of ever-growing population and reducing the mal nutrition, to achieve the 17 sustainable goals and Ending all forms of hunger by 2030, as set forward in the UN-Sustainable Development Goal 2 (UN-SDG2).

INTRODUCTION

Vegetables are an indispensable commodity for human health besides enhancing income the growers and others involved in the value chain. Wild Vegetable species in general and wild vegetable relatives of cultivated species hold great potential value. They may serve the mankind in facing the challenges of climatic change and food and nutritional security of the present generation and future generations. The present review reveals that Wild Vegetable Species and their importance in nutraceutical traits improvement in Vegetables.

REVIEW AND DISCUSSION

Wild Relative Vegetable Genetic Resources building blocks for Vegetable Breeding



Tomato Wild species
Solanum pimpinellifolium
Trait : Pro vitamin A



Caro Red Tomato
Rich in Pro Vitamin A

Caro Red Pro Vitamin A (10 times) (Rutgers x *Solanum hirsutum*) **Gene:** B and moB from Wild spp., **Ref:** M L Tomes et al., 1958 Economic Botany, 12 (3) 1958, pp. 256-260



S. Cheesmaniae



S. chilense

Good sources of anthocyanin atrovillacium (atv) from *S. cheesmaniae*.

S. pimpinellifolium, *S. chmielewskii* and *S. cheesmanii*, with much higher concentrations of 9-15% Total Soluble Solids

Capsicum chinense



Capsicum frutescens



High capsinoids source : Bhoot Jolokia and Dhan Jolokia (*Capsicum chinense* and *Capsicum frutescens*)

Solanum aethiopicum



Solanum aethiopicum accession S00197 for high antioxidant activity



Cucumber species *Xishuangbanna* gourd (*C. sativus* var. *Xishuangbananensis*) for beta carotene.



M. dioica - Source for Protein



Momordica cochinchinensis - Source for lycopene



B. villosa

B. drepanensis

Brassica species *B. villosa* is donor for Glucosinolates. *B. villosa*/ *B. drepanensis* and *B. atlantica* had predominantly 3-methylsulfinylpropyl 3-methylthiopropyl and 2-propenyl glucosinolates, respectively

Common bean: *Phaseolus coccineus* and *P. dumosus* are richest sources of Iron (127 ppm)

CONCLUSION

The potential of Vegetable Wild Genetic Resource (VWGR) is tremendous, enabling us to meet with future challenges such as food and nutritional security. This is achievable through identification, collection, conservation, documentation and utilization of these VWGRs.