Title: Biotechnological interventions of improvement in cabbage (*Brassica oleracea* var. c*apitata* L.)

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Abstract: Cabbage (*Brassica oleracea* var. *capitata* L.) is an extensively grown vegetable crop because of its nutritional and medicinal value. The crop is pervaded by various biotic and abiotic stresses and hence constant improvement of cabbage is of paramount importance. Crop improvement relies on gene and genome modulation, either directly or indirectly. Conventional breeding mainly constitutes the indirect approach; while as direct, approach includes RNAi, genome editing, overexpression etc. Conventional breeding methods are insufficient for cabbage improvement, because of being time-consuming and are limited by sexual incompatibility barriers. Therefore, biotechnological interventions become a major requirement. In order to address a range of biotic and abiotic stresses, it is essential to implement crop enhancement initiatives focused on the development of improved crop varieties capable of addressing the existing challenges. This comprehensive review deals with biotechnological techniques such as tissue culture, somatic hybridization, *in vitro* grafting, molecular assisted breeding, genetic engineering, RNAi, genome editing as well as some other approaches useful for cabbage improvement programmes.

Keywords: Brassica oleracea var. capitata Cabbage improvement Biotechnological interventions Genetic engineering Genome editing Tissue culture Molecular breeding Abiotic and biotic stress tolerance

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