Identification of Simple Sequence Repeat (SSR) Markers Linked to Downy Mildew Resistance Gene in Cauliflower (*Brassica oleracea* var. *botrytis* L.)

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ABSTRACT

Downy mildew caused by the fungus *Hyaloperonospora parisitica* Constant (Pers.:Fr) Fr. is a devastating disease of mid-season cauliflower in north Indian plains. The present investigation was carried out to identify molecular markers linked to downy mildew resistance gene using 92 recombinant inbred lines (RILs) developed from a cross of 'Pusa Himjyoti', a susceptible and 'BR-2', a resistant donor. The phenotypic ratio of resistant and susceptible plants in RILs segregated in 1 (R) : 1 (S) ratio in the field screening using infector rows of susceptible check Pusa Himjyoti, indicating thereby the resistance to downy mildew is governed by a single gene. Of the 48 SSR markers, nine showing polymorphisms in parents were screened using bulked segregant analysis (BSA). Two markers viz. $BoGMS1330_{193/183}$ and $BoGMS1322_{126/116}$ showed polymorphism in bulk segregant analysis and were able to distinguish resistant and susceptible bulk. The SSR markers $BoGMS1330_{193/183}$ and $BoGMS1322_{126/116}$ were mapped at 4.3 cM and 8.6 cM distance, respectively on either side of the resistance gene. This paper reports these two SSR markers to be used for marker assisted selection of downy mildew resistance genotypes in cauliflower breeding programme.

Keywords: Cauliflower, resistance, downy mildew, SSR, mapping