



## Genome-wide identification and characterization of superoxide dismutase (SOD) gene family in *B. juncea* and *B. rapa* and their response in abiotic-stresses

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### Abstract:

Stresses produce reactive oxygen species (ROS) which damage plant growth and development and reduce productivity of rapeseed-mustard crops (*Brassica*). Efforts in the past have been made to identify such gene families that will help provide resistance against these stresses. SODs constitute the first line of defense against ROS which catalyzes the dismutation reaction  $O_2^- + 2H^+ \rightarrow O_2 + H_2O_2$ . Classification according to their metal co-factors distinguish SODs into three classes: Cu-ZnSOD, MnSOD, FeSOD. Present study reports genome-wide identification of SOD genes which yielded a total of 29 and 18 in *B. juncea* and *B. rapa*. Genomic co-ordinates of BjuSOD genes were obtained from BRAD and mapping was done through MapInspect software. Phylogenetic classification was based on their domain composition, which was also supported by sub-cellular locations predictions. Gene annotation of SOD genes was done via BLAST2GO. Expression analysis under abiotic stresses was done through Trinity Software and candidates were validated under heat and drought stresses in *B. juncea* and *B. rapa* plants through qRT-PCR. Cis-regulatory elements predicted in BjuSOD genes supported the expression analysis data. A total of 10 and 14 abiotic stress responsive SOD genes were successfully predicted in *B. juncea* and *B. rapa* respectively. Our study will help in providing significant information of SOD gene family



responsive to abiotic stresses which would act as a potential resource for the improvement of stress resistance in *Brassica* crops.

### Biography:

Deepika Verma is pursuing her PhD in Plant Biotechnology under the guidance of Dr. Kashmir Singh's supervision from Department of Biotechnology, Panjab University. She has published three papers in reputed journals and has reviewed one manuscript for Scientific Reports.

### Recent Publications:

1. Genome-wide identification and characterization of superoxide dismutase (SOD) gene family in *B. juncea* and *B. rapa* and their response in abiotic-stresses