

## Role of VTL genes in wheat grown under excessive metal conditions

By Dr Bilqeesa Bhat

Scientist at National Agri-Food Biotechnology Institute (NABI), Mohali carried out a study to enrich the iron content in wheat grains. Research team identified and characterized new members of Vacuolar iron Transporters-Like proteins (VTL) in hexaploid bread wheat i.e., wheat containing six homologous sets of chromosomes in its cells.

Team identified multiple *VTL* genes from hexaploid wheat out of which maximum genes were localized on chromosome 2. It was seen that most of the VTL genes were induced when wheat was grown in Fe surplus condition, which supports the role of metal homeostasis in vital processes in plants. Furthermore, it was observed that VTL genes express differently in diverse plant tissues under deficiency of metals such as zinc, manganese, and copper.

No significant changes were observed in expression of wheat *VTL* genes in roots under heavy metals; however, few of genes including *TaVTL2*, *TaVTL3* and *TaVTL5* were up-regulated in the presence of cobalt stress. In this study, scientist carried out a detailed characterization of wheat *VTL* genes that could provide an important genetic framework for addressing metal homeostasis in bread wheat.

Iron (Fe) is one of the important micronutrients required for crop productivity and yield-related traits. Thus, to address the Fe homeostasis in crop plants, multiple metal transporters are being explored. In earlier studies, vacuolar iron transporters (VIT) have been reported and characterized functionally to address increase the nutrient status of cereal crops.

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