Oral Communication  
Session 1

Physical mapping of genes for lutein esterification in chromosome 7D of common wheat

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Carotenoids are important for the production of yellow alkaline noodle from common wheat, pasta from durum wheat and tritordeum derived products. These pigments become more stable during storage and processing when esterified with fatty acids. Thus, carotenoid esterification allows a higher retention through the food chain.

In this work we developed crosses between a set of deletion lines for chromosome 7D in common wheat ‘Chinese Spring’ (CS) and CS-\textit{Hordeum chilense} substitution line CS(7D)7Hch. The F₂ progenies of these crosses were genotyped and used for carotenoid analyses. As expected, the presence of chromosome 7Hch in the hybrids increased the carotenoid content. Besides, the simultaneous presence of 7Hch and 7D also raised the amount of lutein esters in all cases but one, which means that genes for lutein esterification in 7D are located in this missing region.

Using DArTSeq genotyping, the Wheat Reference Genome and the Wheat Expression Browser we identified ten candidate genes annotated as related to esterification processes in this region of chromosome 7D. Furthermore, two of these genes could be related to the \textit{Lute} locus identified in a different background. The synteny between \textit{H. chilense} and wheat makes interesting further study of these candidate genes in \textit{H. chilense} to increase lutein esterification.

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