

IDENTIFICATION OF CHROMOSOME 5A ENCODED POLYPEPTIDES IN WHEAT KERNELS

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The wheat endosperm is composed for 80% of storage proteins which are mainly responsible of dough technological properties. The remaining 20%, the soluble fraction, includes most of the metabolic proteins. If gluten proteins are coded mainly by genes present on the chromosomes 1 and 6, the chromosome location of soluble proteins, including polypeptides with structural and metabolic functions, still needs to be identified and mapped. Genes present on the chromosome 5 identified so far have a role in the quantity of protein, in the frost resistance, and in the kernel hardness.

A procedure to extract specifically the different wheat kernel protein classes has been applied to different genetic lines, such as intervarietal and interspecific chromosome substitution lines, in order to perform two-dimensional proteomic maps allowing to attribute the chromosome localization of specific polypeptides to the 5A chromosome.

We first analysed the interspecific substitution line in which chromosome 5A of the durum wheat Langdon has been replaced by chromosome 5A of *T. dicoccoides*.

For the metabolic fraction, the analysis made on mature seeds of durum wheat, revealed 22 spots corresponding to polypeptides encoded by genes on chromosome 5A of *Triticum dicoccoides* and 10 spots corresponding to polypeptides encoded by genes on chromosome 5A of *T. turgidum* cv Langdon. Among these, the xylanase inhibitor XIP III was found, that has an important role on quality properties.

Concerning the Chloroform-Methanol fraction the analysis revealed 6 spots corresponding to polypeptides encoded by genes on chromosome 5A of *Triticum dicoccoides* and 3 spots corresponding to polypeptides encoded by genes on chromosome 5A of *T. turgidum* cv Langdon.

As regards the use of intervarietal 5A chromosome substitution lines, five lines in which the 5A chromosome of the bread wheat cultivar Chinese Spring has been replaced by each of 5A chromosomes of cultivars Hope, Thatcher, Timstein and Cheyenne, are under investigation.