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ACCUMULATION OF CM PROTEINS IN OLD AND NEW DURUM WHEAT CULTIVARS UNDER DIFFERENT NITROGEN FERTILIZATION

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Wheat represents the cereal crop mainly used by the humankind. However, it belongs to the group of six foods, identified by the Codex Alimentarius, as eliciting IgE-mediated allergic responses such as skin pathologies, gastrointestinal and respiratory disorders. The allergic diseases (bakers' asthma, different kind of dermatitis and food allergy, including exercise-induced anaphylaxis) are induced by wheat kernel proteins. These latter are also responsible of technological and nutritional properties of wheat flours, as well as those of the derived foods.

Wheat kernel proteins are grouped into two major classes: the gluten proteins and the soluble proteins (albumins and globulins). Among these latter, there are also the so-called chloroform-methanol soluble (CM), greatly involved in baker's asthma.

There is a matter of debate regarding the supposed increase in wheat allergies. If this is real or it is the result of the improved diagnostic systems, is unclear. It is certain that plant breeding has caused a dramatic increase in protein content that, of course, involves a higher expression of allergenic proteins. This is particularly evident in the modern durum wheat varieties, that can reach protein contents of about 18% as opposed to the lower values observed in the old cultivars.

Protein content is strongly influenced by available nitrogen that is usually supplied by means of fertilization.

The aim of the present work is to characterize CM proteins of four durum wheat genotypes, two of which correspond to modern Italian varieties (Svevo and Claudio) and two to old Italian varieties (Senatore Cappelli and Urria). These genotypes have been grown in Florence (Italy) with three levels of nitrogen fertilization.

A proteomic comparison (4 genotypes X 3 biological replicas X 3 technical replicas X 2 nitrogen levels=108 2D gels in total) is being performed on the CM fractions of the four genotypes.

Data about such comparison will be presented.