

## USE OF DNA MARKERS TO IDENTIFY DURUM WHEAT CULTIVARS IN THE PRODUCTION OF ALTAMURA PDO BREAD

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Altamura bread is a very popular type of bread produced in Southern Italy starting from durum wheat re-milled semolina. Because of its special organoleptic characteristics and resistance to staling a protected denomination of origin (PDO) mark was awarded to this bread at European level. According to the official requirements of the mark, the technology process has to be carried out by a prolonged sponge-dough fermentation procedure based on sourdough, and special attention to the varietal composition of raw materials (durum wheat re-milled semolina deriving from cultivars *Appulo*, *Arcangelo*, *Duilio* and *Simeto*, alone or in combination, at least 80% of the total) and to their origin has to be fulfilled.

In this work, in order to enable the check of the above-mentioned varietal composition, a method of analysis based on DNA microsatellites has been set up. At this purpose, has been essential prior to investigate about the quality of DNA, in terms of integrity, in the examined products. A good quality DNA, indeed, is important to obtain reliable and reproducible results ensuring the set up of accurate and precise DNA based methods. DNA was thus extracted from starting semolina of the cultivars *Appulo*, *Duilio*, *Arcangelo* and *Simeto*, and from doughs both raw and cooked at different temperatures (from 80 to 250°C). The direct electrophoretic exam of the extracted DNA showed the presence of genomic DNA in semolina and doughs cooked at temperatures below 150°C. Contemporarily, the presence of degraded DNA was detected in doughs starting from 80°C treatments. The dough which underwent severe treatments (200 and 250°C) just showed degraded DNA with the shortest fragments having dimensions of about 150 bp.

As a consequence, it is advisable to perform amplifications using primers of short sequences, in order to have the best probability to obtain good amplification levels even in presence of highly degraded DNA. A set of 10 microsatellite primers was thus considered, since these molecular markers lead to amplicons of about 200 bp, with the aim of searching the most polymorphic primers among the examined cultivars. The obtained results indicated that basing on the exam of three selected DNA microsatellite sequences it was possible to identify univocally each of the four cultivars foreseen by the official recipe of Altamura bread. This method will be useful for checks during both milling and processing into certified PDO bread.