COMMON WHEAT DETECTION IN DURUM WHEAT SEMOLINA BY MICROSATellite-BASED REAL-TIME PCR

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The detection of common wheat (Triticum aestivum L.) contaminations in durum wheat (Triticum turgidum L. var. durum) semolina has always been the object of interest and stimulated the development of numerous analytical methods, generally by searching specific common wheat protein fractions. These methods were mainly aimed to preserve pasta “purity” and check its adherence to Italian rules. Recently, the typical Altamura bread (Apulia, Italy), has been awarded with the European Protected Designation of Origin (PDO) mark, owing to its typicality. This product should be prepared using only durum wheat semolina, and should not contain soft wheat flour. The aim of this work was to evaluate the possibility to apply DNA microsatellite analysis to set up a method for the detection of soft wheat in durum wheat semolina. This strategy can be applied for checking the raw materials used for Altamura bread, as well as for Italian pasta preparation. A total number of 9 primer pairs amplifying microsatellite sequences was chosen for being localized on D-genome according to literature data, and was tested on the DNA extracted from semolina and flour of various durum wheat and soft wheat cultivars, with the aim of verifying the effectiveness in distinguishing common wheat from durum one. The obtained results allowed to select, among them, an efficient D-genome-specific microsatellite. SYBR Green real-time PCR enabled to successfully detect common wheat in semolina, with a threshold of 2.5%.