

Innovation and enhancement of almond processing chain, a project to highlight the almond dried fruit quality in Sicily (South Italy)

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Abstract

Almond dried-fruit consumption is a characteristic of the Mediterranean diet and the related transformation industry could represent a great economic chance for Sicily, the main producing Italian region. Nevertheless, the Italian almond market is suffering a long crisis caused by the international competition with low-cost producing countries. For this purpose, the Sicilian Region funded a multidisciplinary project in which a microbiological monitoring of indoor air and surface matrices has been carried out in two Sicilian packaging companies showing good environmental microbiological profiles and absence of possible aflatoxin-producing fungi. Five cultivars of almond grown in Sicily, of which three of Italian and two of allochthonous origin, were mycologically analyzed: among the different isolated fungi, *Penicillium* and *Aspergillus* spp. proved to be, according to morphological and molecular identification, the predominant in all the analyzed cultivars; in the allochthonous almond cultivars *Aspergillia* sect. *Nigri* and few strains, belonging to *A. flavus* and *A. parasiticus* spp. were found. In experimental conditions, just one *A. parasiticus* and one *A. flavus* strain showed to be aflatoxins- or AFG₁-producers respectively. Regarding the nutritional profile, chemical investigation demonstrated that ‘Pizzuta’ and ‘Fascionello’ Sicilian autochthonous cultivars contain the highest total polyphenols level; same highest content of fats was also detected. The content of other minerals, as K and Zn, was measured and found to be more or less at same level in all the studied cultivars, whereas the Cu and Fe or the Mg contents were higher, with respect to the others, in the ‘Fascionello’ and in the Californian ‘Carmel’ cultivars respectively.