Identification and control of moulds responsible for black spot spoilage in dry-cured ham

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Abstract

The aims of this work were to identify moulds responsible for black spot spoilage in the drying and cellar stages of dry-cured ham processing and evaluate the effectiveness of preventive actions for controlling this alteration. Four mould strains isolated from spoiled hams were identified by morphological characteristics and the ITS and *β-tubulin* sequencing. Two of them were *Cladosporium oxysporum*, one was *C. cladosporioides* and the remaining one was *C. herbarum*. These spoiling strains reproduced the black spots on dry-cured ham-based media and ham slices. Additionally, the effect of water activity (a_w) conditions reached throughout dry-cured ham ripening and the activity of the protective culture *Penicillium chrysogenum* CECT 20922 against the spoiling moulds were evaluated. In the dry-cured ham model system the growth of the *Cladosporium* strains was minimised when the a_w approaches 0.84 or in *P. chrysogenum* CECT 20922 inoculated dry-cured ham slices. Therefore such combination could be used to avoid the black spot formation in dry-cured ham.