P45 - Heat resistance and inactivation of *Talaromyces trachyspermus* spores

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Heat-resistant moulds (HRM) are microorganisms known for their ability to endure high temperatures encountered during heat treatment [1,2]. HRM exhibit both an asexual phase, characterized by the production of non-heat-resistant spores called conidia, and a sexual phase, which results in the production of heat-resistant ascospores [3]. These ascospores are formed inside asci, many of which are enclosed in a large fruiting body called an ascocarp [4]. In their natural state, ascospores remain dormant and require activation by an external trigger, such as heat or high pressure, to germinate [5]. The spoilage caused by HRM is a major challenge for the fruit juice industry, resulting in considerable economic losses, and a key issue in this sector is the presence of *Talaromyces trachyspermus*. Thus, the aim of this work was to evaluate the effect of thermal efficacy on the inactivation of conidia and ascospores produced by *T. trachyspermus*, a strain isolated from industrially processed fruit juices.

The spores of *T. trachyspermus* were produced on malt extract agar under different incubation periods of 2 weeks, 1, 2, and 6 months at 25 °C. Thermal treatments ranging from 45 °C to 70 °C for up to 15 minutes were carried out to determine the temperature required to inhibit conidia and activate heat-resistant ascospores.

The results showed that conidia were completely inactivated at 55 °C after 10 minutes of exposure, regardless of the incubation time. In contrast, ascospores exhibited greater thermal resistance, maintaining their viability, with evidence of thermal activation at 70 °C. Moreover, prolonged incubation periods (1-6 months) increased the thermal resistance of ascospores. These findings suggest that while conidia are heat-sensitive and can be effectively inactivated at 55 °C, ascospores are thermoresistant and can be activated under the pasteurization conditions used industrially. This study underscores the need for rigorous thermal treatments to control *T. trachyspermus* spores in industrial settings, particularly during pasteurization processes.

Society for Mycotoxin Research
Gesellschaft für Mykotoxinforschung e.V.

Consiglio Nazionale delle Ricerche
ISPA
ISTITUTO DI SCIENZE DELLE PRODUZIONI ALIMENTARI

46th Mycotoxin Workshop

May 25-28, 2025, Martina Franca, Italy

Programme


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Local Organizers:
Antonio Moretti, Paola Battilani, and Chiara Dall'Asta

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