

Title: "Fungal Research in fermented cocoa beans in the Brazilian Amazon"

Authors: CHAGAS JUNIOR, G.C.A.¹; ALMEIDA, S.F.O.¹; GUEDES, L.S.¹; RODRIGUES, M.H.C.¹; LOPES, A.S.¹

Institution: ¹Universidade Federal do Pará, *campus* Guamá, Cidade Universitária José da Silveira Netto, Rua Augusto Corrêa 01, Guamá, Belém, Pará, Brasil.

Abstract:

The fermentation of the cocoa beans is one of the first steps to getting the chocolate, being still carried out in some countries in the traditional manner, including Brazil. Such fermentation occurs spontaneously in the presence of various microorganisms, involving yeasts, lactic acid bacteria and acetic bacteria. The beans are susceptible to fungal contamination during and after fermentation. The fungal species belonging to the genera *Aspergillus*, *Mucor*, *Penicillium* and *Rhizopus* were observed in poorly fermented or fermented seeds in unfavorable hygienic conditions. For these reasons, this study aimed to conduct a search of molds present in cocoa beans during the fermentation process. For the implementation, samples of cocoa beans were collected from the city of Tomé-Açu (state of Pará) for 7 days of fermentation, but for analysis were the days samples used 6 and 7, due to increased proliferation of mold at the end of the fermentation process. About 5% of the total weight of almond samples were sanitized with 70% ethanol for one minute and washed with sterile distilled water. Then, the direct plating method, the corresponding almonds were placed in Petri dishes (SCHABO, 2014), containing Potato Dextrose Agar (Sigma®) acidified with 10% tartaric acid and incubated inverted for microbiological incubator at 30 °C for 4 days. For results expression, there was the average number of almonds proliferation of mold and converted into percentage. After the incubation period, there was 90.90% of almonds contaminated with mold, for the sixth day of fermentation and 81.25% of seventh day fermentation almonds. A heave of colonies was removed and placed on slides and taken microscope for microscopic identification with 40x magnification. Septate hyphae were observed, which are characteristic of the genus *Aspergillus*. Recent studies show that *Aspergillus* species are the most isolated in fermentation processes of cocoa beans. Species of this genus can be detrimental in individuals with low resistance due to the ingestion of a mycotoxin: ochratoxin A. With the analyzes, it was observed the proliferation of mold in cocoa beans and in accordance with the characteristics observed in the microscope, molds belonging to the genus *Aspergillus*.

Keywords: fungi; cocoa beans; *Aspergillus*

Financing Agency: ITV – Instituto Tecnológico Vale