TITLE: POTENTIAL OF SPORULATION OF ALICYCLOBACILLUS ACIDOTERRESTRIS IN DIFFERENTS CULTURE MEDIA.

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ABSTRACT: The extreme resistance of bacterial spores to physical and chemical treatments makes them a significant problem for the food industry. *Alicyclobacillus* is a genus composed of spore-forming bacteria that are often associated with deterioration of reconstituted orange juice, causing taste and odor unpleasant to the product. When present in juice processing, the vegetative cells are eliminated in the pasteurizing steps of the orange juice concentrate. The spores, in turn, resist the process, which under favorable conditions can germinate and increase the concentration of that microorganism in the product enough to produce unpleasant aromatic compounds. In view of the above, the objective of this work is to evaluate the sporulation process of *A. acidoterrestris* in different culture media, including reconstituted orange juice. For this, the strain *Alicyclobacillus acidoterrestris* CBMAI 0244 was inoculated in different culture media, with pH 4.0 (BAT, K agar, YGS and reconstituted orange juice) at 45 °C for up to 120 h. At 24h, 48h, 72h, 96h and 120h a spore staining performed to verify the level of sporulation and a quantification of vegetative cell and spore. For spore quantification, the culture centrifuged and washed 3 times with sterile water, serially diluted, subjected to heat shock (80 °C for 10 minutes) and plated on BAT agar. The results showed that with only 24 h of culture, the bacterial growth reached sporulation level higher than 50% in the three culture media evaluated. However, the k medium showed lower growth (approximately 2 logs less than the other two media), but the level of sporulation found was the same. In the reconstituted orange juice, sporulation with 24 h reached a level of 68%, that is, the juice favored sporulation of the microorganism. Over the 120 h evaluated, the level of sporulation was maintained for the k agar medium, YSG and for the orange juice over time. In BAT medium, sporulation favored the increase of incubation time, reaching 85% sporulation (6.44 log spores and 7.56 logs of vegetative cells with 120 h). This result highlights the importance of seeking alternatives to avoid the contamination of the industrial process of orange juice by *A. acidoterrestris*, because once the cell is able to reach a much higher level of sporulation in orange juice when compared to other means favorable to the development with only 24 h.

Keywords: spores, *Alicyclobacillus acidoterrestris*, Orange juice.

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