



## Use of starter cultures with or without nisin in fishburger-type products

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### Abstract:

The present research is on understanding the effects of the use of a starter culture, nisin and a combination of starter culture and nisin in the development and conservation of a fishburger-type product made from molded tambaqui (*Colossoma macropomum*). Design/methodology/approach: The products were vacuum-packed and kept at an average temperature of 6°C. The time of evaluation was 35 days. The samples were collected every five days for microbiological monitoring, which included counts of lactic acid bacteria in MRS agar. Products inoculated with starter culture showed an average lipid content of 0.86%, whereas the products without starter culture had lipid values of 2.03% (control) and 1.71% (nisin, only). This result can be attributed to the lipolytic activity of the start culture. The pH also decreased sharply in groups containing starter culture only, reaching a minimum of 5.28, whereas the lowest value for the control product was 6.12 ( $p < 0.05$ ). This reduction is influenced by release of organic acids produced by starter culture during fermentation process of the product. Lower growth of mesophilic bacteria and psychrophilic bacteria in relation to control product and products with nisin, may be related to its ability to prevent spoilage through formation of pores in their membranes, trans membrane potential depletion and/or pH gradient, resulting in loss of cellular material. Association between Acid lactic Bacteria and nisin was important to control the growth of spoilage. Findings: The products containing starter culture, nisin and a combination of nisin-starter culture, presented a better shelf life than control product. Practical application: Bacteriocins provide another resource for food preservation, especially when used with other barriers. The use of starter's cultures with protective effects improves security of various types of foods and prevents the proliferation of pathogens and spoilage organism, also contributing with attributes of flavor, texture and color. Most importantly, are generally regarded as safe (GRAS). Originality/value: The bio preservation of food is used to enhance food safety and extend its shelf life. The use of ni-



sin and Lactic Acid bacteria, in products derived from fish is important in north region of Brazil, where fish exploitation is a main activity and spoilage of fish products assumes great proportion because of the lack of structure in fish production chain. In this way, this research will contribute to improve the utilization of fish through the development of new products.

### Biography:

Marco Antônio Corrêa Varella currently is a postdoc researcher at the Department of Experimental Psychology, University of São Paulo. Marco does research in Evolutionary Behavioral Genetics, Evolutionary Aesthetics, and Evolutionary Psychology. He is part of the 'Rede Brasileira de Pesquisa do Comportamento de Gêmeos (RBPCG).

### Recent Publications:

1. International society for human ethology travels to amazon: a narrative of a special issue based on the xxii ishe conference, 5-9 august 2014 in belém, Brazil.
2. The Biology and Evolution of the Three Psychological Tendencies to Anthropomorphize Biology and Evolution.
3. Misunderstandings in applying evolution to human mind and behavior and its causes: a systematic review.

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