TITLE: EVALUATION OF THE ANTIMICROBIAL ACTIVITY OF POLY (3-HYDROXYBETHYDRATE) FILMS (P (3HB)) CONTAINING GARLIC OIL

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ABSTRACT:

In the last decades it can be observed that the packaging sector stands out as an important segment, as it constantly seeks new technologies aimed at maintaining product quality and, consequently, increasing its useful life and quality. Therefore, researchers are looking for new materials and methodologies that are feasible in the manufacture of safe packaging. In order to minimize the environmental impacts caused by the accumulation of conventional plastics, biodegradable packaging has stood out. In addition to the growing industry's search for active packaging to increase the shelf life of food and its sensory characteristics and minimize the growth of pathogenic microorganisms in food. Thus, the present study aimed to evaluate the antimicrobial activity of poly (3-hydroxybutyrate) biodegradable polymer films (P(3HB)) incorporated with garlic oil against bacteria of interest in the food sector. P(3HB) films (1% w/v) were prepared by casting. Then, the garlic oil was added at the concentrations of 2, 4, 6, 8, 10, 15 and 20% and after total drying of the films, they were cut into circles approximately 1 cm in diameter and Microbiologically, by means of the disc-diffusion method on agar, against the following species: *Escherichia coli* ATCC 25922, *Staphylococcus aureus* ATCC 27664 and *Salmonella* sp. ATCC 13076. Film disks were placed on the Petri dish containing Mueller Hinton agar after sowing the inoculum and then incubated in a bacteriological oven for 24h/36ºC. There was no antimicrobial activity against the tested microorganisms. Further analyzes should be performed with higher concentrations of garlic oil as the oil is incorporated into the polymer matrix and interacts with the polymer, and thus the diffusion of the antimicrobial compounds into the product can be reduced.

KEYWORDS: P (3HB), garlic oil, antimicrobial.

DEVELOPMENT AGENCY: CAPES