Title: ANTIMICROBIAL AND CYTOTOXIC ACTIVITIES OF AQUEOUS EXTRACT FROM *Agaricus brasiliensis*

Authors Silva, N.L.L. [1]; Navegantes, K.C. [1]; Oliveira, A.L.B. [1]; Gomes, R.S. [1]; Dalla-Santa, H.S. [2]; Monteiro, M.C. [1]

Instituition [1] UFPa - Universidade Federal do Pará UFPa (Rua Augusto Corrêa SN – Guamá, Belém – Pa), [2] UNICENTRO - Universidade Estadual do Centro Oeste (Padre Honorino João Muraro, 875 - Santa Cruz, Guarapuava – PR)

Abstract:

The mushroom *Agaricus brasiliensis* has shown numerous biotech capabilities, and has aroused the interest of the pharmaceutical and food industries due to their nutritional value and the presence of numerous bioactive substances, which include antitumor, antiatherosclerotic, hypocholesterolemic and antimicrobial activities. Among the substances, the polysaccharides have greater biologic potential with immunostimulating and antitumor properties. The polysaccharides are present in the fruiting body, mycelium and the broth culture. Thus, this study aimed to evaluate the antimicrobial and cytotoxic activities of the aqueous extract *A. brasiliensis* (AEAb). The solid cultivation of *A. brasiliensis* leaves lyophilized was provided by the Department of Food Engineering at the State University in the Midwest (UNICENTRO)/PR. The antimicrobial activity of extract was tested against bacteria: *Staphylococcus aureus* ATCC 6538 (gram-positive) and *Escherichia coli* ATCC 8739 (Gram-negative). The aqueous extract was prepared at a stock solution of 200 mg/mL and the antimicrobial activity was performed using the microdilution assay and Resazurin staining obtaining the Minimum Inhibitory Concentration (MIC). The Minimum Bactericidal Concentration (MBC) was obtained by count of colony forming units. Furthermore, it was found bacterial inhibition percentage and the inhibitory concentration 50% (IC50%). The cytotoxicity of the extract into peripheral blood mononuclear cells (PBMC's) was performed by the MTT (3- (4, 5-dimethylthiazolyl-2) -2,5-diphenyltetrazolium bromide) method, to find the cytotoxic concentration 50% (CC50%) and subsequently was calculated the selectivity index (SI). Our data showed that the AEAb had a weak antimicrobial activity, because MIC values to *S. aureus* and *E. coli* were above of 100 mg/mL, and IC50% were of 145 and 122,9 mg/mL, respectively. Regarding the cytotoxic activity, the CC50% was of 2302,5 mg/mL and SI calculation showed that aqueous extract had moderate selectivity both to gram-positive (*S. aureus* = 15,88) and gram-negative (*E. coli* = 18,74). Thus, we conclude that this association was less effective and moderate selectivity against bacteria and mammals eukaryotic cells, however, further studies should be performed with other pathogenic microorganisms.

Keywords: *Agaricus brasiliensis, Staphylococcus aureus, Escherichia coli*, Antimicrobial activity.

Financial Support: CNPq, CAPES