TITLE: EVALUATION OF ANTIBACTERIAL ACTIVITY OF ENDOPHYTIC FUNGI of *Sorghum bicolor*

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ABSTRACT:

Endophytic fungi inhabit the interior of different tissues of the plants, causing no damage. They establish a symbiotic relation with their host plants, in which produce or contribute for the production of bioactive compounds that will support the development of the plant. These bioactive compounds are also seen as source of biotechnological application, such as the production of antibacterial agents. In this context, this study aimed to evaluate the antibacterial activity of 25 endophytic fungi previously isolated from leaves of *Sorghum bicolor*. The microorganisms used for the antimicrobial activity tests were two Gram-positive bacteria: *Staphylococcus aureus*, and *Bacillus subtilis*; and two Gram-negative bacteria: *Escherichia coli,* and *Klebsiella pneumoniae.* At first, the endophytes were grown on the surface of culture medium Agar Sabouraud supplemented with chloramphenicol (100 mg/L), incubated at rrom temperature (28 ^{o}C, ±2) during 7 days. After this period, culture disks were cut from the colonies, and transferred to the surface of Agar Mueller Hinton culture medium in Petri dishes, previously inoculated with the microorganisms test. After 24 hours the antibacterial activity was evaluated by the observation of inhibition zones, which were measured and expressed in mm. Among the 25 fungi tested, all showed antibacterial activity, at least for one of the four bacteria tested, with inhibition zones varying from 6.3 up to 29.3 mm. Twenty (80%) of the endophytic fungi showed activity against *K. pneumoniae,* and 16 (64%) against *S. aureus*. The isolated 16 was the fungus that showed the best activity with the highest inhibition zone of 29.3 mm against *B. subtilis*, followed by the isolated 38 with 28.3 mm. These results show the importance of the study of these endophytic fungi, since they were able to inhibit the growth of the tested bacteria. Further studies, such as testing in liquid medium, identification of the isolates, and biochemical characterization of the compounds, will be conducted for to fully explore their potential.

Keywords: bioprospecting**,** metabolites, endophytic.

Development Agency: Universidade Federal Rural de Pernambuco.