TITLE: *BIXA ORELLANA MATURATION POINT AND ITS ANTIMICROBIAL ACTIVITY AGAINST Staphylococcus aureus E Escherichia coli*

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ABSTRACT: The time at which the plant is collected is one of the most important factors, since the quantity and even the nature of the active constituents is not the same throughout the year. This work aimed to evaluate the antimicrobial activity of two Urucum fruit extracts at different harvesting times against strains of *Staphylococcus aureus* (ATCC 33591) and *Escherichia coli* (ATCC 35218). The Bixa orellana was botanically authenticated and the fruits were extracted with 95% ethanol for 48 hours at a temperature ranging from 26 to 28℃ and the filtration was carried out, which was then passed through a rotary evaporator at 50ºC to obtain the extract. The standardization of the inoculum was performed by means of a growth curve, relating the absorbance (600 nm) to the CFU / mL. Absorbance readings were performed periodically until 10^8 CFU / mL were obtained. The minimal bactericidal concentration was determined in triplicate by the serial dilution technique, with eight dilutions, starting from the stock concentration of 25 mg / mL according to CLSI (2015). The surface plating technique was used in Soybean Tryptone Agar (TSA) medium and culture of the microorganism in broth-infusion of brain and heart (BHI). Younger urucum extract presented higher antimicrobial activity on S. aureus, with MBC of 0.3125 µg / mL. The oldest annatto was effective in MBC of 2.5%. This difference can be attributed to the harvest period and climate, where we believe that bioactive compounds may differ in quality and quantity. The two fruits did not present a MBC against *E coli.* The mechanism of action of extracts may be related to their metabolites that have toxic effects to the cell membrane. They are more efficient in the wall of the Gram-positive bacteria than in the Gram-negative wall.

Keywords: fruit age, metabolites, antimicrobial, dye.