TITLE: MODIFICATION OF PHENOLIC COMPOUNDS CONTENTS, COLOR AND TECHNOLOGICAL PARAMETERS IN SUGARCANE JUICE INDUCED BY RATOON STUNTING DISEASE

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ABSTRACT:
Sugarcane is one of the most important crops in Brazil and widely cultivated in many parts of the world. The propagation is made by stalk cuttings containing lateral buds and it's a semi-perennial crop, which means that the buds can regrow for up to 6 to 8 times before the cane field is replaned. In the first year the plants are denominated cane-plant and the new plants regenerated in the following years are denominated of ratoon. Sugarcane is the host to a large number of pathogens, which may limit its production. Ratoon Stunting Disease (RSD) is a disease caused by the endophytic bacterium *Leifsonia xyli* subsp. x*yli* (Lxx). RSD infection can occur by planting contaminated material or by the transmission of the pathogen from contaminated plants to healthy plants during planting and harvesting through the contamination of the cutting instruments by the xylem juice of the plant. The disease is not related to the death of the plant, but to the significant reduction of its productivity. Two cultivars of sugarcane, CB49-260 (susceptible) and SP80-3280 (resistant), were used in the experiment. The plants were divided into two distinct groups, inoculated (I) with Lxx (strain CTCB07) and non-inoculated (NI). Lxx was quantified by real-time PCR. Technological parameters were measured through ºBrix, turbidity and Icumsa and color parameters (L^*, b^*, a^*, C^*_{ab}, h_{ab}) were scanned by CAS 140 spectroradiometer. Chromatography analysis were performed (from 200 to 700 nm) in triplicate using UHPLC Agilent 1290 system with diode-array detector (DAD). Inoculated plants (CB and SP) had higher values of ºBrix, turbidity and color parameters (mainly L^*, b^*, C^*_{ab}, h_{ab}). All samples were located in the first quadrant of the (a*b*)-plane, which represents positive values for a* and b* in the yellow-orange region. CB samples inoculated with Lxx form a distinct group of the other samples, being closer to the angle of 70º. In chromatography analysis, 13 phenolic compounds could be identified for the susceptible variety, mainly from the flavones, flavonols and flavanones groups with isoorientin being the compound with higher concentrations. For the resistant variety, benzoic acids and hydroxycinnamic acids had greater participation among the 12 identified phenolics, being vanillic acid the one of greater concentration.

Keywords: Sugarcane juice, CIELAB, Ratoon Stunting Disease, Phenolic compounds, Sugar production

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