TITLE **Bacterial cellulose production by Komagataeibacter hansenii and microbial consortium using alternative media**

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Cellulose is one of the most abundant biopolymers on the planet. This natural polymer has great economic importance and great technological interest, being considered one of the largest productions in the world with about 19.7 million tons manufactured in Brazil alone in 2019. Bacterial cellulose has a high production cost due to the formulation of the medium commercial cultivation, making the membrane formed not popularly known and its product overvalued. Culture media often contain glucose as a carbon source, along with other costly nutrients. For this reason, low-cost alternatives are being tested so that this process becomes viable. In this context, from a symbiotic association between bacteria and yeasts called kombucha, a cellulosic film is also formed in a medium composed of an infusion of tea leaves. Therefore, in this work, the production of bacterial cellulose was evaluated with alternative means to analyze the best cultivation condition for the formation of membranes, using both the isolated strain of *Komagataeibacter hansenii* ATCC 23769 and the symbiotic association that gives rise to kombucha. The synthesized membranes were evaluated and characterized by thermogravimetric analysis (TGA), differential scanning calorimetry (DSC) and Fourier transform infrared spectrophotometry (FTIR). Membranes produced in black tea had higher yield, highlighting the membrane produced by kombucha, which also showed greater thermal stability. All experiments performed synthesized bacterial cellulose membranes, using both *K. hansenii* and kombucha in different culture media, with a higher yield for membranes produced in black tea medium. It is observed that a greater amount of membrane produced by kombucha obtained greater yield in the same period of growth, greater thermal stability, as well as characteristics similar to the membranes formed by K. hansenii. It is noteworthy that in addition to having been synthesized in a low-cost medium (black tea), there was no temperature control and the sterilization processes for the culture medium and container were not applied. From this, it is concluded that it is possible to obtain bacterial cellulose membranes from low cost culture media and with the same properties as those produced in its formulated culture medium.

keywords *Komagataeibacter hansenii* ; kombucha; Bacterial cellulose