

Bioactive Catheter to Prevent Systemic Infection Using Cashew Nut Shell Liquid (CNSL)

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Catheters are the most used devices in treating hospitalized patients and in hemodialysis procedures. However, its use represents a potential risk for blood infections (possibly sepsis or septicemia). *Staphylococcus aureus*, the most common microorganism found in blood culture from patients with blood infection is resistant to many antibiotics. On the other hand, the cashewnut shell liquid (CNSL) that is a byproduct of the cashewnut industry contains anacardic acid, which is known by its antimicrobial effect against *S. aureus*. CNSL has a high polymeric potential, with a low production cost. Therefore, I intended to use the CNSL to produce a bioactive catheter that can prevent septicemia. The polymer was produced mixing 1 mL of castor oil polyurethane (PU) plus 0.25 mL of CNSL during two minutes at room temperature. It was shaped in a homemade mold, dried for three hours and then removed from the mold. The produced polymer was tested for physical-chemical properties and antimicrobial properties. Microbial quantification, antibiogram, autoclave sterilization, permeability, absorbance, x-ray diffraction, wettability and resistance tests were performed. The produced polymer showed standard results in resistance, impermeability, wettability and X-ray diffraction and also showed no growth of *S. aureus* in any of its surface during the antimicrobial tests. These tests show that it is possible to produce a bioactive catheter using CNSL with potential to prevent septicemia.

Awards Won:

Patent and Trademark Office Society: Second Award of \$500

Fourth Award of \$500