

TITLE: ACETAMINOPHEN ADSORPTION BY BACTERIAL NANOCELLULOSE AND BIOSURFACTANT

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ABSTRACT: THE LACK OF INVESTMENT IN THE WATER TREATMENT SYSTEMS, IN RELATION TO PHARMACEUTICAL PRODUCTS, BRING ABOUT THE PRESENCE OF PHARMACEUTICAL PRODUCTS, SUCH AS ACETAMINOPHEN, AND ITS METABOLITES IN THE AFLUENTS HAS CONCERNED RESEARCHERS, MAINLY BECAUSE EVEN IN NANOCENTRATIONS THESE PRODUCTS ARE TOXIC, AND CAN CAUSE SERIOUS DAMAGE TO AQUATIC BIOTA AND HUMAN. THEREFORE, THE DEVELOPMENT OF AN ECOLOGICALLY BIOSORVENT HAS A GREAT RELEVANCE IN BIORREMIATION STUDIES, WITH THE WITHDRAWAL OF AQUATIC POLLUTANTS, USING BACTERIA AS *Gluconacetobacter xylinus* (GX), PRODUCER OF NANOCELLULOSE, AN INERT BIOPRODUCT FORMED BY 99% OF WATER, AS *Bacillus subtilis* (BS) DECREASE SURFACE TENSION AND POSITIVELY INFLUENCE ON THE SURFACE OF CONTACT. BACTERIAL NANOCELLULOSE WAS PRODUCED THROUGH THE CULTIVATION OF GX IN HESTRIAN&SCHRAMM (HS) IN PLATE 24 WELL, IN STATIC CULTURE, UNDER 30°C FOR 15 days. ALSO, SAMPLES OF BIOSURFACTANTS WERE PRODUCED IN TRYPTONE SOY BROTH (TSB) UNDER AGITATION 150 rpm, AT 35°C FOR 96 h AND PURIFIED BY LIQUID-LIQUID EXTRACTION. AFTER THE PURIFICATION PROCEDURE THE BIOSURFACTANT SAMPLES WERE RESUSPENDED IN METHANOL (95%). FOR THE ADSORPTION KINETIC ASSAY WERE UTILIZED 0.5g OF BACTERIAL NANOCELLULOSE WITHOUT AND LOADED WITH BIOSURFACTANT WERE ADDED IN 60 mL OF ACETAMINOPHENE (2 g/L) THE SAMPLES WERE KEPT UNDER ADITATION (100 rpm) AND IN EACH DEFINED TIMES (10, 20, 30, 45, 60, 120, 240, 360, 720 AND 1440 minutes) SAMPLES WERE COLLECTED, FILTERED AND ANALYZED BY UV-VIS SPECTROSCOPY. THE RESULTS WERE COMPARED WITH ACETAMINOPHEN STANDARD CURVE. THE LOW ADSORPTION OF ACETAMINOPHEN WAS OBSERVED WITH BACTERIAL CELLULOSE, HOWEVER WHEN THE BS WAS ADDED THERE WAS AN ADSORPTION WAS OBSERVED. THE PRODUCTION AND INCORPORATION OF BS IN BACTERIAL CELLULOSES WAS EFFECTIVE AND ABLE TO REMOVE A SINGNIFICANT QUANTITY OF THE CONTAMINANT, BEING AN ECOLOGICAL ALTERNATIVE FOR THE BORREMIATION OF PHARMACEUTICAL COMPOUNDS.

KEYWORDS: ADSORPTION; BACTERIAL CELULLOSE; BIOSURFACTANT; PHARMACEUTICAL.

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