# DEVELOPMENT OF PCL NANOFIBERS FOR DELIVERY OF PECAN BIOACTIVE COMPOUNDS IN ADJUNCTIVE LEUKEMIA TREATMENT

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The use of natural bioactive compounds from pecans is a novel approach in adjunctive leukemia therapy. In this work, we´re focusing on a method to deliver these pecan compounds in a controlled manner using polycaprolactone (PCL), a versatile polymer commonly used in drug delivery. The research involved fabricating electrospun fibers of PCL, a versatile polymer known for its biomedical applications. Electrospinning was optimized using a design of experiments varying voltage (13-20 kV) and flow rate (0.03-0.0003 mL/min). Solubility tests revealed that PCL dissolved easily in chloroform at concentrations of 8% and 10%. However, attempts at electrospinning with 10% concentration resulted in failure due to high voltage requirements and low flow rates. The investigation revealed that by maintaining moderate flow rates and voltage settings set at 13 kV the desired electrospinning is achieved. Characterization of the electrospun fibers using scanning electron microscopy (SEM) showed a narrow size distribution, with average fiber diameters of approximately 500 nm. Importantly, the molecular weight of PCL significantly influenced nanofiber obtention, with higher molecular weights (80,000 daltons) yielding desired structures compared to lower molecular weights which led to excessive dripping. This system is a promising candidate for the release of bioactive compounds from pecans for adjunctive leukemia therapy.

**Keywords:** Electrospinning, Nanofibers, Drug delivery

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