



## Extraction, purification, and investigation of the antibacterial potential of lysozyme isolated from the latex of *Calotropis procera*

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### Abstract

*Calotropis procera* produces a latex used in traditional medicine because of its components which are found to be biologically active. The latex of *C. procera* has many benefits such as pain reduction, antimicrobial attitude and other precious attributes. Latex lysozyme (LL) is a particular protein contained in *C. procera* plant having a promising antibacterial property. The process applied for extraction implicated ammonium sulfate precipitation, water extraction, ion exchange and gel filtration column chromatography evidencing 14.4 kDa for LL as a molecular mass. LL after purification showed 397.18 U mg<sup>-1</sup> as specific activity (10.30 purification fold), and with 37.9% as a yield. In addition, the chemical and physical analyses showed that LL had its best realization when the pH was 5.5 at 50 °C. Moreover when metal ions such as Ca<sup>2+</sup> and Mg<sup>2+</sup> were incorporated the relative activity of the enzyme resulted amplified. When a purification was conducted with CM-Cellulose and Sephadex G-100 chromatography, LL revealed an antibacterial property versus both *Escherichia coli* (MICs 14 µg ml<sup>-1</sup>) and *Bacillus cereus* (MICs 13 µg ml<sup>-1</sup>). HR-TEM analysis displayed an antimicrobial potential of LL after its purification; that analysis showed the deterioration of the cell wall (external membrane of the cell) of both *E. coli* and *B. cereus*. Therefore, the LL obtained from *C. procera* maintains ability as an antibacterial enzyme applicable in various domains such as biotechnological and pharmaceutical industries.

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