

THE STRUCTURE OF CMS2MS2, A MITOGENIC PROTEIN ISOLATED FROM LATEX OF *CARICA CANDAMARCENSIS*.

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The latex of *Carica candamarcensis* contains several cysteine proteinases believed to be part of a defense mechanism. In a prior study we proposed that latex proteinases may act in a heterologous manner in mammals, promoting clot formation after wounding and replacing necrotic tissue. We showed that a protein fraction from *C. candamarcensis* acts as mitogen on mammals cells and in a subsequent report we identified two proteinases (CMS2MS2 and CMS2MS3) displaying mitogenic activity on fibroblast cells. The purpose of this study was to determine the primary structure of CMS2MS2, to compare its sequence with other proteinases from *Caricaceae* and predict its three-dimensional structure to help understand its unique properties. The monomeric protein contains 214 residues, a mass of 23592.86 Da, seven cysteine residues and the catalytic tryad composed by Cys₂₅, His₁₅₉, Asn₁₇₅. The similarity analysis shows that CMS2MS2 shares 83% identity with CC-III from the same species, 74% with chymopapain, and 59% with papain from *C. papaya*. The three dimensional structure confirms that most structural elements of CMS2MS2 are shared by proteases from the papain family. These results suggest that minor structural differences within the mitogenic proteinases should account for their proliferative action.

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