

We isolated a novel lectin (*Artocarpus nitidus* subsp. *lingnanensis* lectin, ALL) from *Artocarpus nitidus* subsp. *lingnanensis* and showed its mitogenic activities. In this study, we determined the amino acid sequence of ALL by cDNA sequencing. ALL cDNA (933 bp) contains a 657-bp open reading frame (ORF), which encodes a protein with 218 amino acids. ALL shares high sequence similarities with Jacalin and Morniga G and belongs to jacalin-related lectin family. We also examined the antitumor activity of ALL using Raji, a human B-lymphoma cell line. ALL exhibits a strong binding affinity to cell membrane, which can be effectively inhibited by N-acetyl-D-galactosamine (GalNAc). ALL inhibits Raji cell proliferation in a time- and dose-dependent manner through apoptosis, evidenced by morphological changes, phosphatidylserine externalization, poly ADP-ribose polymerase (PARP) cleavage, Bcl-2 down-regulation, and caspase-3 activation. We further showed that the activation of p38 mitogen-activated protein kinase (MAPK) signaling pathways is required for the pro-apoptotic activity of ALL.

ALL is a novel member of Jacalin-related lectins. ALL stimulates p38 MAPK signaling pathway and inhibits Raji cell proliferation through apoptosis.