

Antibacterial Effect of the Water-Soluble Lectin from *Moringa oleifera* Seeds (WSMoL): Analysis by Confocal Microscopy

Brito, J.S.¹; Ferreira, G.R.S.¹; Moura, M.C.¹; Figueiredo, R.C.B.Q.²; Paiva, P.M.G.¹; Coelho, L.C.B.B.¹; Coriolano, M.C.¹

¹Dep de Bioquímica, CCB, UFPE, PE, Brazil; ²Dep de Microbiologia, Centro de Pesquisas Aggeu Magalhães, Fundação Oswaldo Cruz, Recife, Brazil.

INTRODUCTION: Bacteria are prokaryotic organisms that have medical significance by causing infections in humans and have been reported as emerging agents responsible for nosocomial infections. Lectins, carbohydrate-binding proteins, have been reported as potential antimicrobial agents. **OBJECTIVES:** Evaluate the bacteriostatic and bactericidal effects of a water-soluble lectin isolated from *Moringa oleifera* seeds (WSMoL), as well to investigate WSMoL effects on the induction of protein leakage from bacterial cells and on the integrity of *Enterococcus faecalis* and *Micrococcus luteus* cell wall. **MATERIALS AND METHODS:** Antibacterial assays for both bacteria were performed in 96-well microplates using Muller-Hinton medium with various dilutions of WSMoL. The evaluation of protein leakage from bacteria cells treated with WSMoL for 24h was performed using the protein determination by Lowry method. Bacteria cells exposed or not to WSMoL were stained using the LIVE/DEAD BacLight kit for microscopy in order to evaluate the occurrence of membrane disruption. **RESULTS AND DISCUSSION:** WSMoL showed bacteriostatic and bactericidal effects against *E. faecalis* (MIC of 15.63 µg/mL and MBC of 125 µg/mL) and bacteriostatic effect against *M. luteus* (MIC of 41.75 µg/mL). At MIC, the lectin caused the leakage of bacterial cell proteins in all strains tested in a dose-dependent manner. Images of confocal microscopy of *E. faecalis* and *M. luteus* showed that WSMoL caused loss of cell integrity. **CONCLUSION:** The results reveal that WSMoL was an bioactive compound with inhibitory and bactericidal action against pathogenic bacteria by affecting cell permeability and interfered with membrane integrity.

Keywords: Antibacterial activity; *Moringa oleifera*; seeds.

Supported by: FACEPE, CNPq, CAPES and MCTI.