

Protein produced by *Bacillus subtilis* ATCC21332 in the presence of *Cymbopogon flexuosus* essential oil

ABSTRACT

Proteins levels produced by bacteria may be increased in stressful surroundings, such as in the presence of antibiotics. It appears that many antimicrobial agents or antibiotics, when used at low concentrations, have in common the ability to activate or repress gene transcription, which is distinct from their inhibitory effect. There have been comparatively few studies on the potential of antibiotics or natural compounds in nature as a specific chemical signal that can trigger a variety of biological functions. Therefore, this study was focusing on the effect of essential oil from *Cymbopogon flexuosus* in regulating proteins production by *Bacillus subtilis* ATCC21332. The Minimum Inhibition Concentration (MIC) of the *C. flexuosus* essential oil on *B. subtilis* was determined by using microdilution assay, resulting 1.76mg/ml. The bacteria cells were further exposed to the *C. flexuosus* essential oil at concentration of 0.01 MIC for 72 h. The proteins were then isolated and analyzed by sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE). Proteins profile showed that a band with approximate size of 30 kDa was appeared for the treated bacteria with *C. flexuosus* essential oil. Thus, *B. subtilis* ATCC21332 in stressful condition with the presence of *C. flexuosus* essential oils at low concentration could induce the protein production. The isolated protein also showed antimicrobial activity against selected Gram-positive and Gram-negative bacteria.

Keyword: *Bacillus subtilis* ATCC21332; *Cymbopogon flexuosus* essential oil; Protein