Low Cost Extraction and Pre-Purification of Bromelain Derived from Croata (Neoglaziovia variegata) by High Performace Liquid Chromatography: An Effective Antibacterial and Antifungal Alternative?

Adriano, Francisco

Lima, Francisco

The production and application of natural enzymes is an emerging interest. Bromelain is a proteolytic enzyme useful in the production of pharmaceuticals. Brazil lacks low-cost alternatives for the extraction of this enzyme. In this scenario, a native plant, Croatá (Neoglaziovia variegata) has emerged as an alternative for high-throughput extraction of bromelain. High Performance Liquid Chromatography (HPLC) is an efficient method to extract bromelain. Through literature searches, we found that this bromeliad we study has bromelain in a quantity exceeding pineapple (Ananas comosus), which is usually the industrial source for this enzyme. The presence of enzyme was detected during phytochemical analysis of the fruit. We isolated and purified bromelain using High Performance Liquid Chromatography (HPLC) from Neoglaziovia variegata. We tested microbial activity using microplatescontaining Escherichia coli SBS363,(Gram- negative), Micrococcus luteus A270, (Gram-positive), Candida albicans MDM8 (a yeast) and Aspergillus niger (a filament fungus). Preliminary results show Flat Layer Chromatography (TLC) and High Performance Liquid Chromatography (HPLC) are effective alternatives in the pre-separation and purification of bromelain. Secure and precise tests proved the existence of antibacterial activities at peak 22 and antifungal activity at peaks 12, 17 and 22. This shows that Neoglaziovia variegate is a fruit containing bromelain. We will validated the use of Flat Layer Chromatography (FLC) and High Performance Liquid Chromatography (HPLC) as alternatives to purify and separate bromelain as well as to show it´s antimicrobial power.

Awards Won: