

## Biological Activities of Polysaccharides Extracted from *Vernonia cinerea* and *Vernonia zeylanica*

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Many members of the genus *Vernonia* are shown to have biological activity which contained important chemical compounds. In recent years, there has been a growing interest in polysaccharides obtained from higher plants that may have biological activities. This study was focused to investigate the antioxidant, antimicrobial and protease inhibition activity of crude polysaccharides extracted from *Vernonia cinerea* and *Vernonia zeylanica*. Plant materials were collected from Ankumbura forest area in Kandy district, Sri Lanka. Polysaccharides were extracted from the powdered above ground plant materials by hot water and alkali extraction methods and were fractionated separately. FT-IR analysis was performed using potassium bromide powder for the purified polysaccharide fractions in the frequency range of 400 to 4000  $\text{cm}^{-1}$ . Total carbohydrate analysis and antimicrobial activity were performed using phenol sulfuric acid method and agar well diffusion method against *Staphylococcus aureus* and *Cladosporium cladosporoides* respectively. Antioxidant activity was determined by DPPH radical scavenging activity assay and OH scavenging activity assay. The highest total carbohydrate content (9.1  $\text{mg ml}^{-1}$ ) was recorded from NaOH extraction of *V.zeylanica*. The FTIR analysis confirmed the presence of polysaccharides, which displayed bands characteristic to O-H, C-O-C, and C-O groups. NaOH extraction of Polysaccharide from *V.zeylanica* displayed the highest antibacterial activity against *Staphylococcus aureus*. NaOH extraction of *V. zeylanica* showed the highest significant scavenging abilities ( $p < 0.05$ ) on hydroxyl radicals ( $\text{IC}_{50}$ , 4.832  $\text{mg ml}^{-1}$ ) whereas the highest significant scavenging abilities ( $p < 0.05$ ) on DPPH radicals ( $\text{IC}_{50}$ , 9.594  $\text{mg ml}^{-1}$ ) was shown by the hot water extraction. Significant difference was not observed in all fractions for protease inhibition activity. Thus, this study reveals that polysaccharides extracted from *V. zeylanica* have significant biological activities.

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