

## **Electrophoretic mobility of nano-emulsified cinnamon oil in sodium dodecyl sulphate-polyacrylamide gel electrophoresis (SDS-PAGE) system**

### **ABSTRACT**

A novel application of sodium dodecyl sulphate-polyacrylamide gel electrophoresis was evaluated to differentiate the quality of two commercial cinnamon bark oil samples extracted by steam distillation and cold pressed. Prior to the electrophoresis, cinnamon oils were emulsified with non-ionic surfactant, tween 80 at 2% v/v of critical aggregation concentration. The droplets prepared were within 30 to 70 nm size and zeta potential values of -4 to -12 mV consisted of certain amount of bioactive compounds that responded to specific molecular mass and electrophoretic mobility so that separation using SDSPAGE can be performed. The resolution bands at 21% gel with 48% acrylamide concentration and 3.33% of cross-linker demonstrated that high quality (steam distilled) cinnamon oil migrated slower through gel due to its large molecular weight components when compared to the low quality (cold pressed) cinnamon oil. The difference in the relative mobility, 0.68 and 0.75 of emulsified steam distilled and cold pressed cinnamon bark oils, respectively, was attributed by their entrapped components impinging upon their electrophoretic mobility.

**Keyword:** Emulsion; Critical aggregation concentration (CAC); Polyacrylamide gel electrophoresis; Relative mobility; Molecular weight

---