ABSTRACT

Ginger (*Zingiber officinale* Roscoe) is one of the most widely used herbs that contains several interesting bioactive constituents and possesses health-promoting properties. Ginger is used all over the world for two of its main extracts, named "essential oil" and "oleoresin". In this study three locally available ginger varieties of "Local" (Siddha), "Rangoon" and, "Chinese" were used, grown at Makandura the area which is located in Kurunegala district at North Western province of Sri Lanka. Three replicates for each sample were collected. The objectives of this research were extraction of ginger oleoresin from collected ginger samples and, determination of variation of oleoresin and 6-Gingerol percentages at selected stages of maturity at harvesting. The value of isolating natural 6-Gingerol from the ginger oleoresin has been comprehended, to use it as the standard for the chromatographic analysis of ginger for the reason that, not only ITI but also all the laboratories and food, beverage and, pharmaceutical companies in Sri Lanka use synthetic 6-Gingerol to the analytical work. This synthetic 6-Gingerol standard is imported to Sri Lanka and it is extremely expensive.

The extractions of oleoresin from the unpeeled, dried, sliced ginger were done by means of solvent extraction (Acetone) using hot extraction with the soxhlet apparatus. To determine the content of 6-Gingerol HPLC was used. Waters Nova – Pak C18 3.9 *150 mm column, Methanol- Acetonitrile - De- ionized water (30: 30: 40) as the mobile phase, at flow rate of 1 ml per minute with the detecting wavelength of 280 nm.

According to the statistical analysis of data, it was realized that the interaction effect between the stage of maturity and the ginger variety, is affected on the variations of ginger oleoresin and 6-Gingerol in oleoresin at harvesting. According to the multiple comparisons of mean, '5 month of maturity - Local variety' combination was the best combination for having high percentage of ginger oleoresin and '9 month of maturity and Local variety' combination was the best combination for having high 6-Gingerol percentage among the selected samples.

Three silica gel (60-120 mesh) columns (2 cm diameter to height 25 cm) were used to isolate 6- Gingerol eluting with Hexane at increasing concentrations of Methanol and with Dichloromethane at increasing concentrations of Methanol. In the forth silica column, 97.6% of 6- Gingerol was able to isolate by 0.5 gm of Methanol extracted ginger oleoresin eluting with 100 ml of Dichloromethane, 100 ml of 1% Methanol in Dichloromethane, 150 ml of 1% Acetone in Dichloromethane. Fractions containing 6-Gingerol were concentrated using the rotavapour. TLC plate was run with the existing synthetic 6-Gingerol standard for the conformation of 6-Gingerol in the concentrated sample.