ASSESSMENT OF OIL YIELD AND OIL QUALITY IN CINNAMON (*Cinnamomum zeylanicum* Blume) LEAVES UNDER DIFFERENT SEVERITY LEVELS OF TWO TYPES OF LEAF GALLS (*Trioza cinnamomi, Eriophyes boisi*)

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ABSTRACT

Leaf gall infestation in cinnamon, is one of the prominent pest damage among cinnamon cultivations. In cinnamon two conspicuous leaf gall types are available. They are upper leaf galls caused by jumping plant louse (*Trioza cinnamomi),* a homopteran and lower leaf galls caused by *Eriophyes boisi* a mite belongs to family *Eriophyidae*. Two pests are plant sappers and they form galls on leaf blade as their habitats. Each gall type is identical due to many unique characteristics. The feeding by the mite or the *Trioza cinnamomi* causes abnormal cell development and the formation of galls. These gall forming pests generally do little damage to plants because the affected parts are able to carry out photosynthesis with near normal efficiency although the vigor of the plant may be reduced specially in young stage. This study was conducted to determine the changes in oil quantity and oil quality due to different severity levels of each infestation. The leaf samples were collected from a field in Palolpitiya area of Matara, Sri Lanka and laboratory experiment was carried out at National Cinnamon Research and Training Centre, Matara, Sri Lanka to confirm the changes in oil quantity and quality under different infestation levels. Leaves suffer from each infestation were harvested separately and categorized them into five pre determined severity levels based on number of galls per leaf. Five replicates were performed under each treatment. Amount of 50 g of air dried leaf sample was taken, all the galls in that sample were isolated, weighed and that weight was expressed as a percentage to the whole sample weight. Each sample was subjected to extract leaf oil by hydro distillation. Quality of the extracted oil samples were measured by performing Gas Liquid Chromatography (GLC). According to the results both upper and lower gall infestations caused to reduce the oil yield in cinnamon leaves. The oil reduction due to upper leaf gall infestation happened from 10.48% (at 25.62% severity) to 74.26% (at 97.26% severity). The oil reduction due to lower leaf gall infestation happened from 25.87% (at 22.7% severity) to 66.45% (at 62.93% severity). Lower leaf gall infestation caused to reduce the eugenol content in total cinnamon leaf oil from 83.214% at 22.7% severity of infestation to 73.53 % at 99.6% severity of infestation., while upper leaf gall infestation significantly increase cinnamaldehyde and acetyl eugenol contents which are the minor components in cinnamon leaf oil. Amount of the acetyle eugenol in total cinnamon leaf oil is increased from 4.91% at 25.62% of the infestation to 6.31% at the 97.26 % while amount of the cinnamaldehyde in total cinnamon leaf oil was increased from 2.09% at 25.62% of the infestation to 3.48% at the 97.26% of the infestation of upper leaf gall attack.

Key words: *Trioza cinnamomi, Eriophyes boisi,* homopteran, *Eriophyidae,* steam distillation, Gas Liquid Chromatography