**Analysis of the Gene Expression Profiles of Oxidative Stress Tolerant Genes in Newly Developed Rubber (*Hevea brasiliensis*)Genotypes**

**REH Lenora1\*, SP Withanage2 and PWM Tharindi1**

*1 Department of Export Agriculture, Faculty of Agricultural Sciences, Sabaragamuwa University of Sri Lanka.*

*2 Department of Genetics and Plant Breeding, Rubber Research Institute of Sri Lanka, Substation Niwithigala Kale, Mathugama, Sri Lanka.*

 *\***emalkihansani97@gmail.com*

Sri Lanka is renowned for producing quality latex products to the global rubber market. Rubber (*Hevea brasiliensis)*is considered as one of the major export agricultural crops in Sri Lanka. A physiological disorder termed Tapping Panel Dryness (TPD) is considered as a crucial constraint to the industry which severely reduces yield by 15 % - 20 % annually. Over production and over accumulation of Reactive Oxygen Species (ROS) in cells under oxidative stress contribute to the occurrence of TPD. Accumulated ROS are detoxified by the antioxidants present in cells. Current research was performed to study the expression of CAT and GPX genes responsible for producing two such antioxidants, catalase and glutathione peroxidase respectively. Four genotypes of 2011 HP selections were selected for the experiment which were established in 2018 at Eladuwa estate, Kalutara as an Estate Collaborative Trial. RRISL 2006 recommended clone was selected as the control. RNA extraction and cDNA synthesis were performed in order to perform the quantitative PCR. 2-ΔΔCT method was used to analyze the quantitative gene expression. According to the quantitative PCR data, both CAT and GPX genes were upregulated in all the selected genotypes (2011 HP 42, 2011 HP 202, 2011 HP 297 and 2011 HP 300) with reference to the control clones under low soil moisture conditions. The two genes have been up-regulated in several *Hevea* clones which are less susceptible for TPD. As the gene expression studies facilitate the early selection of promising clones expediting the conventional breeding, the obtained gene expression profiles provide a unique opportunity for early screening of genotypes that are capable of self-recovering and less susceptible to TPD incidence. Altogether, the study provides insights on features of CAT and GPX genes in rubber, which might be utilized for additional functional analysis to extrapolate their precise involvement in abiotic stress responses.

**Keywords:** *antioxidants, quantitative PCR, reactive oxygen species, tapping panel dryness*