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ANTIFUNGAL ACTIVITY OF *Hevea brasiliensis* FRESH LATEX

AND RUBBER PROCESSING EFFLUENT IN RELATION TO

POLYPHENOL COMPOSITION AND POLYPHENOL

OXIDASE ACTIVITY AS A POSSIBLE PROTECTION

APPROACH AGAINST FUNGAL DISEASE

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ABSTRACT

Hevea brasiliensis, an important rubber plant in the region of South East Asia faces many pathological problems including the white root disease from *Rigidoporus microporus* that affects the latex production. In this study, C-serum from the fresh latex of *H. brasiliensis* and rubber-processing effluent from a processing plant was obtained to explore the possible antifungal activities and its relation to polyphenols. Antifungal activities of both samples were tested against the infective fungal organism of white root disease, *Rigidoporus microporus* and other soil-borne fungi including *Aspergillus niger*, *Fusarium sp* . and *Penicillium sp* . through poison plate method. Both samples were assessed for polyphenol content via total phenolic content (TPC) assay and its oxidizing enzyme, polyphenol oxidase (PPO). The C-serum showed the highest inhibition percentage on the *R. microporus* at 59% and lowest on *A. niger* at 16%, while the effluent only showed inhibition on *R. microporus* at 10%. Presence of phenolics was found higher in the C-serum (1.745 g/ml gallic acid equivalent) than the effluent (0.061 g/ml gallic acid equivalent). PPO activities were detected at 0.0145 unit/?g sample in *H. brasiliensis* and 0.0092 unit/?g sample in the effluent. This observation suggest the attribution of phenolics content towards antifungal activities in the *H. brasiliensis* which may be important in regulation of disease prevention through breeding activities. Understanding the PPO activity in *H. brasiliensis* is also important owing to the relation with protection against tapping wound in rubber plant as well as the browning of latex produced from this crop.

Key words: *Hevea brasiliensis*, antifungal activities, *Rigidoporus micropus*, polyphenol, disease resistance