

## DECAY RESISTANCE OF EXTRACTIVE-FREE BELIAN (*EUSIDEROXYLON ZWAGERI*) AND MALAGANGAI (*POTOXYLON MELAGANGAI*)

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Belian (*Eusideroxylon zwageri*) and malagangai (*Potoxylon melagangai*) are among the heaviest and very durable timbers of Malaysia and Indonesia. It is well known that the natural durability of timbers is influenced by their extractives content. This study was carried out to determine the decay resistance of extractive-free *E. zwageri* and *P. melagangai* wood. Heartwood and sapwood of *E. zwageri* and *P. melagangai* were cut into test blocks of 2 cm x 2 cm cross-section and 5 mm thickness. Extractives were extracted using Soxhlet apparatus. The four wood decay fungi used in this study were three white-rot fungi, *Lentinus sajor-caju*, *Trametes versicolor* and *Pycnoporus sanguineus*, and one brown-rot fungus, *Gloeophyllum trabeum*. Wood decay was assessed based on weight loss after 12 weeks exposure in the soil block test. Test blocks exposed to *P. sanguineus* resulted in higher weight loss than those exposed to *G. trabeum*. Sapwood and heartwood of *E. zwageri* showed higher decay resistance compared with *P. melagangai*. Extractive-free blocks had higher weight losses than the unextracted blocks. Although extraction of extractives significantly reduced decay resistance of both wood species, the extractive-free blocks could still be considered resistant. This study showed that the high resistance of *E. zwageri* and *P. melagangai* to decay is due to the presence of toxic extractives. However, extractives are not the sole factor contributing to decay resistance of both wood species.

Key words: Extractives - white rot - brown rot - wood decay

### Introduction

Natural durability or natural decay resistance of timber is generally attributed to the deposition of materials in the heartwood that are toxic to fungi and termites. Variations in decay resistance are found to be associated with differences in concentration and type of extractive. Essentially, the ability of timber to resist decay and attack by insect destroying agents especially termites is attributed to a number of factors. These include the presence of toxic extractives (Scheffer & Cowling 1966, Zabel & Morell 1992, Desch & Dinwoodie 1996, Haygreen & Bowyer 1996), lignin type and quantity (Peterson & Cowling 1964, Syafii *et al.* 1988), permeability, nitrogen content, mineral deposits and rate of growth (Singh *et al.* 1992).

Belian (*Eusideroxylon zwageri*) and malagangai (*Potoxylon melagangai*) have been used for decades in situations where natural durability and strength of timber were required. It is a well-known fact that both timbers have a long service life under conditions that are favourable to decay and termite attack. Natural durability is an important property of timber. Increasing concerns about the negative impact