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**Effects of aspect orientation and water treatment on the secondary metabolite of the lichenized fungi *Parmotrema tinctorum* transplanted to artificial substrates in Thailand**Supranee Santanoo<sup>1\*</sup>, Phiphatphong Thepnuan<sup>2</sup>, Chutima Sriviboon<sup>2</sup>, Santi Watthana<sup>3</sup>,  
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The lichenized fungus *Parmotrema tinctorum* is a common lichen in Thailand. Its secondary metabolic product has potential to be utilized in several aspects. The objective of this study was to investigate the effects of water treatment and aspect orientation on production of secondary metabolites of the lichen *P. tinctorum* transplanted on a man-made substrate. Nine hundred and sixty thallus fragments of *P. tinctorum* were transplanted on nylon nets that stand at about 40° inclination over the ground at Khao Yai National Park. These substrates faced the four cardinal directions as well as one horizontal net. Three water treatments were applied to the transplanted thalli, consisting of no extra water (control), evaporated moisture from soil watering, and spraying water over the thalli. After 36 months of transplantation, soil watering enhanced methyl orsellinate, atranorin, chloro atranorin and lecanoric acid 71%, 46%, 46% and 25% respectively in the east-facing thalli, whereas chloro atranorin, atranorin and orsellinic acid increased 61%, 46% and 9% respectively in the horizontal thalli. Soil evaporated water did not enhance secondary metabolite production on the south, the west and the north orientation, except chloro atranorin. The thalli that received spray water all died. This study revealed that most secondary metabolites of this lichen increased in thalli that received more moisture from soil watering, and higher illumination from the east in the morning. However, different lichen substances require different moisture and light regime to enhance their productions.

Keywords: Lichen transplantation, *Parmotrema tinctorum*, secondary metabolite, aspect orientation

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