**CO-CULTURE EXPERIMENTS BETWEEN A LICHENIZED BASIDIOMYCETE *Dictyonema moorei* AND ITS PHOTOBIONT *Rhizonema* sp.**

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*Dictyonema moorei* is a lichenized basidiomycete belonging to Hygrophoraceae in Agaricales, and the photobiont is *Rhizonema*, a filamentous cyanobacterium in Nostocales. We collected *D. moorei* in Japan and established axenic cultures of both mycobiont and photobiont from the fragmented thallus. Next, to resynthesize the lichenized thallus, the mycobiont was inoculated onto cellophane membranes or balsa plates placed on various agar media, and then a suspension of photobiont was added to them, and co-cultured up to 3 months at 20 °C, 20 µmol m-2 s-1, 16h light/8h dark cycles. As a result, the lichenized thallus was observed under the conditions using water agar or MDM agar media. The trichome structure of photobiont changed greatly during the lichenization. In the non-lichenized state, the trichome cells were barrel-shaped, showed brownish-green color, arranged in a row, and were difficult to be separated from each other. On the other hand, in the lichenized state, the cells showed bright blue-green color, became larger and rounded shape, lined up from one row to multiple rows, and each cell was easily separated by crushing. When the induced lichenized thallus was observed by transmission electron microscopy (TEM), it was confirmed that the mycobiont hyphae formed the tubular haustoria inside the trichome cells. These features are similar to those of *D. moorei* in the field, indicating that the lichenization can be induced under laboratory conditions. *Dictyonema moorei* has greatly altered the appearance of *Rhizonema* during lichenization, and the elucidation of these changes will contribute to the understanding of lichen symbiosis involving cyanobacteria in particular.