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Aldrovanda vesiculosa was rescued *in vitro* from extinction and is now conserved *ex-vitro*

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Abstract. *Aldrovanda vesiculosa*, an almost extinct aquatic carnivorous plant, was rescued for conservation by culture and propagation in vitro and is maintained ex-vitro through its whole life cycle.

Introduction

Since *Aldrovanda vesiculosa* was described by C. Darwin, it has attracted much academic interest and studies have been done widely on its morphology and mechanism of trapping *Daphnia* (Juniper *et al.*, 1989). However, because of recent deterioration of the environment, *Aldrovanda vesiculosa* is a species now close to extinction. The purpose of this research project is to rescue *Aldrovanda vesiculosa* in vitro from extinction and conserve it ex-vitro to conduct morphological and physiological research throughout the year.

Materials and Methods

Apical segments of *Aldrovanda vesiculosa* were excised and sterilized in 0.5% $NaClO_3$ for 5 min. After rinsing 3 times with sterilized DW, they were cultured in 1/10 MS liquid medium (Murashige and Skoog, 1962) at 25±2℃ under 16h light and 8h dark condition. After 1 month, developed axillary buds were excised from the plants for further subcultures. The procedure was repeated and the propagated plants were taken ex-vitro and kept outside in plastic containers with paddy field soil and tap water.

Results and Discussion

In vitro cultured *Aldrovanda vesiculosa* proliferated well, without trapping, by formation and development of axillary buds. The number of the plants doubled in 1 month (Fig.1). After transfer to ex-vitro, they kept growing in containers outside (Fig.2) trapping *Daphnia* (Fig.3, arrow), produced flower buds at the end of June (Fig.4, arrow), and flowered in July (Fig.5). Mature seeds harvested from the plants were sterilized in 0.5% $NaClO_3$ for 20 min and kept in 1/10 MS liquid medium. The seeds germinated in December (Fig.6) and the growth continued in vitro (Fig.7). The plants which were maintained outside produced winter resting buds in December (Fig.8), and germination was observed in the following spring (Fig.9). This study allowed us to conduct morphological and physiological research on *Aldrovanda vesiculosa* throughout a whole year. However, growth of *Aldrovanda vesiculosa* kept ex-vitro was often impeded

by proliferating algae to the extent that the plants eventually completely disappeared. The for this undesirable phenomenon needs to be sought out.

Acknowledgement

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References

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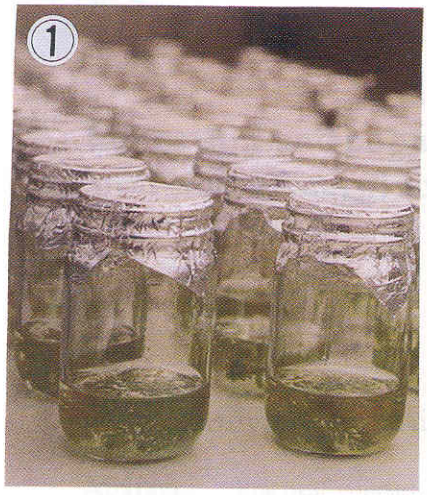
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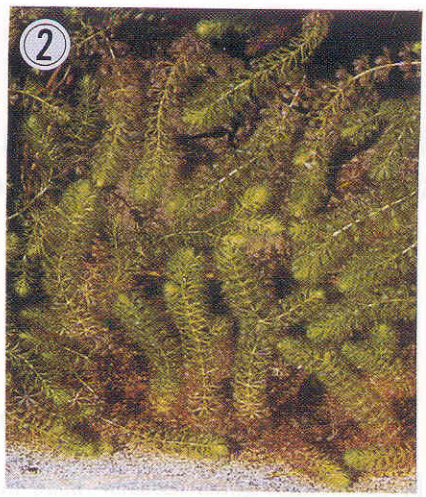
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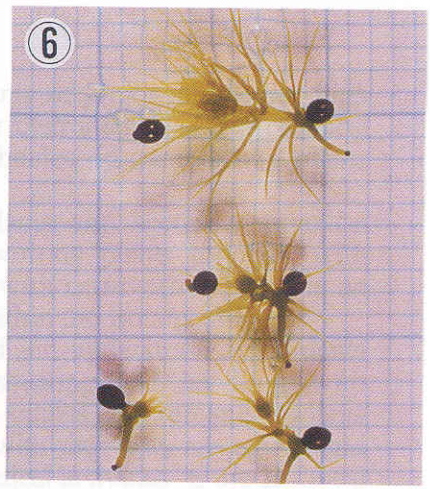
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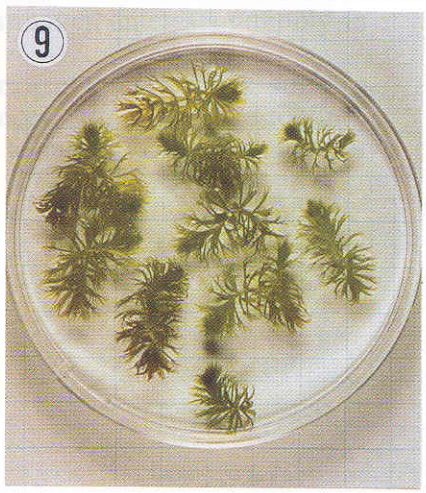
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