Micropropagation of *Farfugium japonicum*

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INTRODUCTION

Farfugium japonicum Kitam., a perennial plant in the Asteraceae Family, is grown for food or as an ornamental plants in the forest area of the south-west coast of Japan. The plant is propagated usually from seed or by division. The technique of micropropagation, however, is considered to be more effective for obtaining a large number of elite clones of the plant. We studied the effect of hormones on the propagation of plantlets by in vitro division and on the formation of adventitious buds from petiole explant.

MICROPROPAGATION PROCEDURES

Donor plants derived from the meristems were cultured on Murashige and Skoog (MS) medium supplemented with 0.1 mg liter^{-1} benzyladenine (BA) and 0.1 mg liter^{-1} naphthaleneacetic acid (NAA). When the plants reached about 5 cm (2 inches) in height, all the leaves and roots were cut off from these basal parts. The stumps were divided into three parts which were approximately 3 mm in diameter. The divided stumps were cultured as explants on the MS medium supplemented with thidiazuron (TDZ) or BA.

RESULTS

The formation of adventitious buds from the explants was greatly enhanced by 1 mg liter^{-1} TDZ. The in vitro division was carried out at monthly intervals. The majority of plantlets divided had four leaves. After 2 months of culture, the cultures were transferred to the medium without hormones to obtain normal plantlets by division. BA (1 and 2 mg liter^{-1}) had little effect on the propagation by in vitro division. In the medium with 1 mg liter^{-1} TDZ, the number of plantlets obtained by division, increased exponentially with the time of culture. From this, the equation $Y=A^x$ was derived experimentally, where Y is the number of plantlets, ^{x} is the culture time (month), and A is the rate of propagation. From the data in this experiment, the value of A was estimated to be 5.6. This suggests that the plantlets could be multiplied constantly 5.6 times per month by in vitro division using TDZ. The plantlets obtained rooted easily in the MS medium without hormones.

The combination of TDZ (1 mg liter^{-1}) and NAA (0.1 m liter^{-1}) gave the best result for the formation of adventitious buds from the petiole explants. The successive effect was observed in the medium with 1 mg liter^{-1} BA and 0.1 mg liter^{-1} NAA. In the medium supplemented with the cytokinin but without NAA, the formation of adventitious buds was rarely observed. The results show that the combination of cytokinin (TDZ or BA) and auxin (NAA) is necessary for the formation of adventitious buds from the petiole explants. After acclimatization, the plants obtained by the methods grew normally in a greenhouse.