

Abstract:

As a model system for studying ethylene-independent floral senescence we have selected Four o'clocks, *Mirabilis jalapa*. As a first step to developing a transformation/regeneration (T/R) system, we have investigated ways to obtain rapid and efficient regeneration of *Mirabilis jalapa* plants. After testing a wide range of explants, media, and culture conditions, we determined that we could obtain high rates of meristem formation using cotyledons excised from mature embryos. The cotyledons and their subtending petioles were isolated from mature seeds and cultured in the dark for one week on Murashige and Skoog (MS) medium containing 1mg.L^{-1} IAA and 1mg.L^{-1} thiadiazuron (TDZ). The cotyledons were then transferred to regeneration media and cultured in the light. The regeneration medium contained MS salts and vitamins and 2 mg.L^{-1} TDZ. After four weeks, shoot meristems appeared on more than 80% of the petioles. Most of the meristems could develop to mature shoots, and then to intact plants.