Abstract:

Mannitol was identified as one of the major carbohydrates in flowers, stems and leaves of snapdragon (Antirrhinum majus L.). To investigate the possible role of mannitol, we treated the cut flower spikes of snapdragon with mannitol at various concentrations. The effects of glucose, sucrose or sorbitol were also examined for comparison. The treatment with 10 to 500 mM mannitol markedly promoted flower bud development and spike elongation accompanied by an increase in the number of nodes. Although glucose or sucrose at 250 mM promoted the flower opening more than mannitol, these carbohydrates promoted the bud development and spike elongation only slightly. The treatment with mannitol increased the concentration of mannitol in terminal buds more than those of other carbohydrates. On the contrary, the treatments with glucose and sucrose markedly increased the concentrations of glucose, fructose and sucrose, but only slightly that of mannitol in these organs. These results show that mannitol in snapdragon, has a specific physiological action, which is observed neither with glucose, sucrose nor sorbitol.