

Short Communication

The Influence of Growth Regulators Absorbed by the Root on Sex Expression in Hemp Plants

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Abstract. Application, through the root system, of growth regulators to hemp (*Cannabis sativa* L.) plants having 2–3 pairs of visible leaves caused pronounced shifts of sex expression in the adult individuals. Treatment with gibberellic acid (25 mg/l) resulted in more than 80% of the plants being male, i.e. having staminate flowers (controls, ca. 30%). Treatment with 6-benzylaminopurine and with indole-3-acetic acid (in either case, 15 mg/l) resulted in all plants being either female (pistillate flowers) or intersexes (bisexual flowers); treatment with abscisic acid (10 mg/l) had a similar but somewhat less pronounced effect.

Key words: Absciscic acid — Auxin — *Cannabis* — Cytokinin — Flowers (sex) — Gibberellin — Sex expression.

It is well-known that sex expression in plants with unisexual flowers can be modified by hormone treatment. In hemp (*Cannabis sativa* L.), spraying with gibberellin solutions increases the number of male plants, i.e. plants with staminate flowers (Atal, 1959; Zhukov et al., 1963; Chailakhyan et al., 1969; Khryanin, 1969) while spraying with auxin enhances the appearance of female plants (pistillate flowers) and “intersexes” (bisexual or hermaphroditic flowers) (Heslop-Harrison and Heslop-Harrison, 1956). Cytokinin treatment promoted formation of female flowers in a male grapevine (Negi and Olmo, 1966).

Sex expression in hemp was found to be determined quite early, when the third leaf pair became visible (Khryanin and Milyaeva, 1977). We studied the effect of growth regulators, applied to the roots



Fig. 1. The influence of growth regulators, absorbed by the roots, on growth and sex expression of hemp plants. From left to right: controls, gibberellic acid, 6-benzylaminopurine, indole-3-acetic acid, abscisic acid (ABA)