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Plant Hormones Alter Fiber Initiation in Unfertilized, Cultured Ovules of *Gossypium hirsutum*

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Fiber initiation in two commercial cultivars of *Gossypium hirsutum*, MD51 and MAXXA GTO, was compared. MAXXA GTO produced significantly more fiber initials in ovules grown either *in vivo* or *in vitro*. Unfertilized ovules grown in culture without plant hormones exhibited a steady increase in fiber number over the experimental period. Exogenous applications of the plant hormones indole-3-acetic acid or gibberellic acid, either pre-anthesis to flower buds and developing flowers or post-anthesis to ovules, were examined in the MAXXA GTO cultivar. Unfertilized ovules treated pre-anthesis with 0.1 mg L⁻¹ indole-3-acetic acid produced a greater number of fibers than did ovules treated with 1.0 mg L⁻¹ gibberellic acid or water. Post-anthesis treatment with 1.0 mg L⁻¹ gibberellic acid in the culture medium increased fiber production, compared with water or 0.1 mg L⁻¹ indole-3-acetic acid applied in the culture medium. Application of either hormone (depending on concentration and time of treatment) resulted in an increase in fiber production, compared with controls. Fiber production in the absence of hormone treatment, either pre- or post-anthesis, suggests that hormones may not be a requirement for fiber initiation. Manipulation of the hormonal levels might cause an increase in the proportion of epidermal cells that differentiated as fibers. On the other hand, the hormone treatments might induce cell division, resulting in more epidermal cells and, consequently, a greater number of fiber initials. These results indicate that, given an appropriate stimulus, ovules have the capacity to produce a greater number of fibers.