

**[E. Turco](#), C. Brubaker, J. Scown, G. Mergeai, B. Mori, C. Vizzuso and A. Ragazzi (2004)**

Gossypol, a substance involved in the cotton/[Fusarium oxysporum](#) f.sp. *vasinfectum* interaction

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**Abstract:** The genus *Gossypium*, in which cotton, the most important fiber crop belongs, is characterized by the presence of terpenoid aldehydes ("gossypol"), in pigment glands of seeds and the aerial part of the plant. Gossypol is a known phytoalexin and additional terpenoid aldehydes are produced following infection by *Fusarium oxysporum* f.sp. *vasinfectum* (FOV). The use of cotton seeds by-products (oil, cakes, and flour) is strongly limited because gossypol is toxic to non-ruminant animals and causes male sterility in humans. For this reason, new cotton hexaploid "low gossypol" or "glandless" hybrids were developed. Experiments were carried out to test in vitro the effect of various levels of gossypol on some morphological parameters of FOV. No statistically significant difference was observed on colony growth, whereas a negative and significant correlation was evident between the gossypol concentration ( $\text{mg l}^{-1}$ ) and conidial germination rate. For in vivo trials under greenhouse conditions, cotton hexaploid seedlings were infected with different FOV isolates collected from Australia and from other cotton-growing areas. High disease incidence was observed in FOV-infected hybrids as compared with control genotypes. Fourteen to 21 days after inoculation, hybrid seedlings showed a stronger and rapid development of symptoms, such as chlorosis, wilting, and leaf necrosis. In conclusion, the use of gossypol as an alternative method for the control of cotton wilt disease is suggested and information is provided on the possible sources of genetic resistance to FOV in the different cotton diploid genomes.

Database assignments for author(s): [Elena Turco](#)

**Research topic(s) for pests/diseases/weeds:**

resistance/tolerance/defence of host

general biology - morphology - evolution