

**EVALUATION OF SELECTED AMINO ACIDS
ON EMBRYOGENESIS OF COTTON**

Zhenshou Ke and J. McD. Stewart

Agronomy Department

University of Arkansas

Fayetteville, AR

Abstract

The effects of amino acids on development of embryogenic potential from hypocotyl-derived callus were studied on upland cotton (*G. hirsutum* cv. Coker 312) and Asiatic cottons A1-45 (*G. arboreum*) and A1-19 (*G. herbaceum*). Hypocotyls from 1-week-old seedlings were cut into 0.5-cm segments and cultured on 40 ml/plate MS medium with 0.1 mg/l 2,4-D, 0.5 mg/l kinetin and 30 μ M AgNO₃ solidified with 3 g/l phytagel. Six-week-old callus was transferred to the same medium without hormone (regeneration medium) but containing amino acid additions. Four basic amino acids, arginine, asparagine, histidine and lysine, that are known to be lower in embryogenic callus than non-embryogenic callus, and spermidine were studied. Two methods for sterilizing the amino acids, filtering and autoclaving, also were investigated. The effect of two carbohydrates, sucrose and glucose, was compared in the filter sterilized amino acid cultures. The four basic amino acids were toxic at 5 to 10 mM or above for callus growth, but there was some differential response among species and amino acids. The combination of arginine and sucrose had a slight positive effect on production of embryogenic callus. Spermidine at 2.5 mM enhanced the production of embryogenic callus and embryos of CK-312 in sucrose treatments when added after autoclaving.