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Modifying Gossypol in Cotton (*Gossypium hirsutum* L.): A Cost Effective Method

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Cotton (*Gossypium hirsutum* L.) and related species all contain gossypol, a polyphenolic compound that is an integral part of the cotton plant's self-defense system against insect pests and possibly some diseases. Gossypol also has been reported to have antitumor activity, medicinal effects, and contraceptive properties. However, the compound can be toxic to animals, which limits the usefulness of cottonseed as animal feed. Breeding projects to manipulate seed gossypol levels usually require the analysis of numerous samples and often small amounts of material. Our objective was to use a scaled-down version of the American Oil Chemists' Society (AOCS) Official Methods to measure gossypol and develop an easy, low-cost method for preparing small amounts of seed for analysis. Results show that gossypol analysis can be conducted on ground dehulled seed samples as small as 50 mg without significant loss in reproducibility. Comparison of dehulling methods used to obtain seed kernel tissue for analysis showed that wet dehulling of seed results in slightly higher estimates of gossypol levels. Preliminary results for a range of cotton lines, analyzed each year over a 3-y period, indicated that although the percent of total gossypol measured varied slightly across years, these values were generally consistent for the cultivars or genetic stocks tested. These modified methods give consistent results and allow for handling many small seed samples.