1979

Dhurrin in *Sorghastrum nutans*

H. J. Gorz  
*University of Nebraska - Lincoln*

Francis A. Haskins  
*University of Nebraska - Lincoln*, fhaskins@neb.rr.com

Richard Dam  
*University of Nebraska - Lincoln*

Kenneth P. Vogel  
*University of Nebraska - Lincoln*, Ken.Vogel@ars.usda.gov

Follow this and additional works at: http://digitalcommons.unl.edu/agronomyfacpub

Part of the [Plant Sciences Commons](http://digitalcommons.unl.edu/agronomyfacpub)

http://digitalcommons.unl.edu/agronomyfacpub/173

This Article is brought to you for free and open access by the Agronomy and Horticulture Department at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Agronomy & Horticulture -- Faculty Publications by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.
DHURRIN IN SORGHASTRUM NUTANS*

H. J. Gorz, F. A. Haskins, Richard Dam and K. P. Vogel
AR, SEA, U.S. Department of Agriculture and University of Nebraska, Lincoln, NB 68583, U.S.A.

(Received 26 April 1979)

Key Word Index—Sorghastrum nutans; Gramineae; indiangrass; cyanogenesis; dhurrin; taxiphyllin.

The isolation of dhurrin, the cyanogenic glycoside of Sorghum, was reported by Dunstan and Henry in 1902 [1]. This compound, now known to be (S)-p-hydroxymandelonitrile β-D-glucopyranoside [2, 3], was the first cyanogenic glycoside isolated from a representative of the Gramineae [4]. The occurrence of other cyanogenic glycosides in certain grasses is now recognized [4, 5], but according to Fat [4], Sorghum remains the only genus in which the presence of dhurrin has been firmly established. In this report, evidence is presented indicating that dhurrin also occurs in seedlings of the warm season perennial prairie grass, indiangrass, Sorghastrum nutans (L.) Nash.

EXPERIMENTAL

Indiangrass seedlings were grown under fluorescent lights at 27°C, in a mixture of vermiculite and perlite subirrigated with Hoagland's Solution No. 1. When seedlings were 12-14 days old, plumules were excised and were immersed immediately in 95% EtOH (ca 10 ml/g fr. tissue). After 20 min of heating at 80-85°C with occasional stirring, the extract was decanted. The residue was rinsed with small vols. of 95% EtOH without heating, and rinsings were added to the extract. The combined solution was evaporated to dryness at ca 80°C with an air stream passing over the surface of the soln. The residue was taken up in H2O (ca 2.5 ml/g fr. tissue) and filtered. Aliquots of the amber filtrate were chromatographed by ascending on Whatman 3MM filter paper in n-BuOH-95% EtOH-H2O, 40:11:19 [6]. Putative dhurrin was detected as an absorbing band, Rf ca 0.70, on chromatograms exposed to NH3 and examined under 254 nm UV light. The absorbing band was eluted with 95% EtOH, and the eluate was evaporated to ca 2.5 ml/g fr. tissue. As described below, this conc eluate (A) was subjected to PC and to alkaline hydrolysis. Also, the putative dhurrin was acetylated, and the NMR spectrum and mp of the resulting pentaacetate were determined.

The following eight solvent systems, most of which are described by Seigler [6], were used in the chromatographic comparisons: (a) 2-butaneone-acetone-H2O, 15:5:3; (b) n-BuOH-Py-H2O, 6:4:3; (c) n-BuOH-H2O, 50:50; (d) n-PrOH-H2O, 7:3; (e) n-BuOH-95% EtOH-H2O, 40:11:19; (f) iso-

REFERENCES