Bioactive Gibberellins Show Differential Abundance at Key Phenological Stages for Berry Growth in Table Grapes

Por: Ravest, G (Ravest, Gonzalo)[1,2]; Mamani, M (Mamani, Maribel)[1,2]; Giacomelli, L (Giacomelli, Lisa)[3]; Moser, C (Moser, Claudio)[3]; Pastenes, C (Pastenes, Claudio)[2]; Hinrichsen, P (Hinrichsen, Patricio)[1]

AMERICAN JOURNAL OF ENOLOGY AND VITICULTURE
Volumen: 68
Número: 4
Páginas: 478-484
DOI: 10.5344/ajev.2017.16036
Fecha de publicación: OCT 2017
Tipo de documento: Article
Ver impacto de la revista

Resumen

Berry size is an important trait for table grape production and is affected by complex physiological and biochemical events that occur from anthesis to ripening. Gibberellins (GAs) play a crucial role in the regulation of this process, as widely demonstrated by exogenous application of gibberellin acid (GA(3)), but the endogenous change in concentration and its relationship with berry size are poorly understood. Using berries from a crossing of Ruby Seedless x Sultanina (RxS) with different phenotypes for berry and seed size, we analyzed GA metabolites at four key phenological stages for berry growth: 50% flowering (FL50), 2 to 4 mm (CU24), 2 to 4 mm plus one week (CU24+1), and 6 to 8 mm. Our results showed that both bioactive metabolites GA(1) and GA(4) were produced, demonstrating that both the 13-hydroxylation and the non-13-hydroxylation GA biosynthetic routes were functional in grape berries. The variable abundance of both bioactive GAs throughout berry growth suggests complex regulation of this pathway. GA(1) had a higher concentration than GA(4) during the FL50 to CU24+1 stages, whereas GA(4) concentration increased later during the berry-setting stage and was relatively constant to the 6 to 8 mm stage. Accumulation of GA(1) was greater than with GA(4), with a three-fold higher concentration at CU24+1. In addition, our results suggested that synthesis of GAs occurred in small seedless berries, but accumulation of GA(4) occurred slightly later than in larger berries with full seeds.

Palabras clave

Palabras clave de autor:berry size; GC-MS; gibberellins; seed content; table grapes
KeyWords Plus:VITIS-VINIFERA; FUNCTIONAL-CHARACTERIZATION; MASS-SPECTROMETRY; PLANT HORMONES; ABSCISIC-ACID; IDENTIFICATION; SIZE; BRASSINOSTEROIDS; OVEREXPRESSION; SEEDLESSNESS

Información del autor

Dirección para petición de copias: Hinrichsen, P (autor para petición de copias)

INIA La Platina, Inst Invest Agr, Santiago 8831314, Chile.

Direcciones:

[1] INIA La Platina, Inst Invest Agr, Santiago 8831314, Chile

[2] Univ Chile, Fac Ciencias Agr, Santiago 8820808, Chile

[3] Fdn Edmund Mach, Res & Innovat Ctr, Via E Mach 1,38010 S Michele Adige, Trento, Italy

Direcciones de correo electrónico:phinrichsen@inia.cl

Financiación

Entidad financiadora	Número de concesión
INIA, Genoma- Chile	FONDEF G07I-1002
Beca Doctorado Nacional-Conicyt	

Ver texto de financiación

Editorial

AMER SOC ENOLOGY VITICULTURE, PO BOX 1855, DAVIS, CA 95617-1855 USA

Información de la revista

- **Impact Factor:** Journal Citation Reports

Categorías / Clasificación

Áreas de investigación: Biotechnology & Applied Microbiology; Food Science & Technology; Agriculture

Categorías de Web of Science: Biotechnology & Applied Microbiology; Food Science & Technology; Horticulture

Información del documento

Idioma: English

Número de acceso: WOS:000413567000008

ISSN: 0002-9254

eISSN: 1943-7749