

Enhancing nutritional and functional properties of broccoli leaves through selenium biofortification: potential for sustainable agriculture and bioactive compound valorization

Melina Soledad Buttarelli ^{1,2}, Gabriel Céccoli ^{1,3,*}, Betiana Soledad Trod ^{1,3}, María Micaela Stoffel ³, Marianela Simonutti ¹, Carlos Alberto Bouzo ^{1,3}, Valeria Turowski ⁴, Adrián Alejandro Perez ⁵, Mercè Llugany ⁶, María-Jesús Sánchez-Martín ⁷, Lucas Damián Daurelio ^{1,3}, María Gabriela Guevara ^{4,*}, Fernando Felipe Muñoz ^{3,4,*}

¹ Instituto de Ciencias Agropecuarias del Litoral (ICiAgro Litoral), Univ. Nacional del Litoral, CONICET, FCA, Laboratorio de Investigaciones en Fisiología y Biología Molecular Vegetal (LIFiBVe), Kreder 2805, CP 3080, Esperanza, Argentina; melinabuttarelli@yahoo.com.ar (M.S.B.); betianatrod@hotmail.com (B.S.T.); simonuttim@gmail.com (M.S.); cbouzo1160@gmail.com (C.A.B.); lucasdaurelio@gmail.com (L.D.D.)

² Agroecosistemas I (Nodo de integración I). Departamento de Biología Vegetal, FCA, UNL, Kreder 2805, CP 3080, Esperanza, Argentina.

³ Cátedra de Fisiología Vegetal, FCA, UNL, Kreder 2805, CP 3080, Esperanza, Argentina; m.micaela.stoffel@gmail.com (M.M.S.)

⁴ Instituto de Investigaciones Biológicas (IIB), Universidad Nacional de Mar del Plata, CONICET, Funes 3250, CP 7600, Mar del Plata, Argentina; vturowski@gmail.com (V.T.)

⁵ Área de Biocoloides y Nanotecnología, Instituto de Tecnología de Alimentos, Facultad de Ingeniería Química, Universidad Nacional del Litoral, 1 de Mayo 3250, CP 3000, Santa Fe, Argentina; adrianperezrubin@hotmail.com (A.A.P.)

⁶ Plant Physiology Group (BABVE), Faculty of Biosciences, Universitat Autònoma de Barcelona, 08193, Bellaterra, Spain; merce.llugany@ub.cat (M.L.)

⁷ GTS Research Group, Department of Chemistry, Faculty of Science, Universitat Autònoma de Barcelona, 08193 Bellaterra, Spain; mariajesus.sanchez@ub.cat (M.J.S.M.)

* Correspondence: fermunoz81@gmail.com (F.F.M.); gabrielcnbj@yahoo.com.ar (G.C.); gguevara@mdp.edu.ar (M.G.G.)

Table S1. Effects of foliar application of selenium on leaf chlorophyll index (SPAD) of broccoli.

Treatment	Chlorophyll index (SPAD)		
	Days after transplanting (DAT)		
	78	85	90
Control	54.43 ± 4.77 abc	63.13 ± 2.4 ab	63.80 ± 2.05 ab
Selenate 1 mM	54.07 ± 1.27 abc	59.90 ± 1.99 a	65.27 ± 0.32 ab
Selenate 2 mM	60.07 ± 1.23 abc	60.9 ± 3.17 a	59.53 ± 2.94 a
Selenite 1 mM	49.00 ± 0.5 a	60.63 ± 2.19 a	63.97 ± 1.29 ab
Selenite 2 mM	56.60 ± 2.65 abc	59.47 ± 3.49 a	65.77 ± 1.55 ab
Treatment x DAT (P-value)	0.9312		

Note. The results are expressed as the means ($n = 3$) ± standard errors. The means not sharing any letter are significantly different according to the LSD test at the $P < 0.05$ level of significance.