

Condensed tannins in *Lotus* species under salt stress

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Condensed Tannins (CTs) are polymeric flavanols formed by condensation of monomeric units such as flavan-3-ols and flavan-3-4-diols (Foo *et al.*, 1996). In *Lotus* species used as forages, a CT content in the range of 1 to 5 mg/g DM is beneficial, in that it prevents cattle bloating and intestinal invasion by parasites (Niezen *et al.*, 1995; Li *et al.*, 1996; Waghorn and Shelton, 1997; Otero and Hidalgo, 2004). In addition, CTs have been proposed to play a role in the interactions between plants and microorganisms, either pathogenic or mutualistic, as well as in plant responses to abiotic stresses (Panckurst and Jones, 1979; Barry and Manley, 1986; Dixon and Paiva, 1995; Gebrehiwot *et al.*, 2002; Reinoso *et al.*, 2004; Paolucci *et al.*, 2005). *Lotus* species exhibit significant variations in shoot and root CT content, both between and within populations (Sivakumaran *et al.*, 2006). Within this genus, the forage species *L. tenuis* (= *L. glaber* Mill.) is particularly important, due to its good adaptation to saline-alkaline soils of the Salado River Basin (Buenos Aires Province, Argentina). One of the aims of our work is to determine the relations between TC metabolism and plant responses to soil salinity. In relation with this topic, experiments were performed using different *Lotus* species, some of them used as forage crops (*L. tenuis* and *L. corniculatus*), some others considered as models for studies on molecular biology and genetics (*L. burttii*, *L. filicaulis*, *L. japonicus* ecotypes Gifu and MG-20) and other species such as *L. creticus*. These species and ecotypes were exposed to salinity, by employing a progressive salinization protocol that reached a final NaCl concentration of 150 mM. Plants irrigated with a nutrient solution without NaCl were used as controls. Twelve replicates (plants) from each species/ecotype were harvested and TC content was determined in shoots, leaves and roots. Significant and contrasting modifications were detected in foliar TC content of *L. creticus* and *L. corniculatus*. *L. japonicus* ecotypes Gifu and MG-20 differed in their foliar TC content, although the levels of these metabolites were not affected by salinity in these ecotypes. Interestingly, differences in shoot anthocyanin contents of these two *L. japonicus* ecotypes were also detected. Salinity induced an increase in shoot TC content of *L. burttii* and both *L. japonicus* ecotypes, which ranged between 21 and 28 %, as compared with controls irrigated without NaCl. Regarding *L. filicaulis*, salinity increased shoot TC content by 87%. Root TC content diminished in a variable degree in *L. burttii*, *L. japonicus*

and *L. tenuis* plants exposed to salinity, while this parameter increased by 27% in *L. filicaulis* plants.

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