

LOX ACTIVITY AND CAROTENOIDS CONTENT OF SELECTED DURUM WHEAT CULTIVARS: IMPORTANCE OF GENOTYPE AND IMPACT OF PASTA PROCESSING

V. DE SIMONE, D.B.M. FICCO, D. TRONO, G. SCHIAVONE, L. CATTIVELLI, P. DE VITA

C.R.A. Centro Ricerche per la Cerealicoltura, S.S. 16 km 675, 71100 Foggia, Italy –
pdevita@libero.it

lipoxygenase activity, carotenoids, durum wheat, pasta processing

Bright yellow pasta colour is the result of the natural carotenoid pigments present in the seeds, of their residual contents after the storage of grain or semolina and after milling, and is also affected by their oxidative degradation by lipoxygenase (LOX) activity during pasta processing. With the main objective to explore and try to improve the nutritional value of durum wheat and durum wheat based products by a multidisciplinary approach involving germplasm evaluations, molecular strategies and transformation processes, ninety-four cultivars and breeding lines of durum wheat (*Triticum durum* Desf.) were screened to quantify the variation of carotenoids content and LOX activity by means of spectrophotometric assays. The seed samples for each genotype were harvested from plants grown in the same location (Foggia, Italy) in 2004-2005 growing-season. Results showed that there was great variability of carotenoids content and LOX activity suggesting the possibility to select cultivars possessing high yellow-coloured seeds with a reduced LOX activity. On the basis of this screening we selected four durum wheat cultivars contrasting for endogenous carotenoids and LOX activity: cv. Primadur with High Carotenoid Content (HCC) and High Lipoxygenase Activity (HLA), cv. Cosmodur with High Carotenoid Content (HCC) and Low Lipoxygenase Activity (LLA), cv. Trinakria with Low Carotenoid Content (LCC) and High Lipoxygenase Activity (HLA), cv. Creso with Low Carotenoid Content (LCC) and Low Lipoxygenase Activity (LLA), with the aim to investigate, in the present study, their endogenous role and susceptibility during the pasta processing. The results reported in the poster suggest that different level of endogenous LOX activity and carotenoids content have differential effects on pasta colour and its degradation during pasta processing. Pasta colour could be improved by breeding cultivars for a high level of carotenoids and a low LOX activity, in order to preserve this potential during milling and pasta processing.