

Title How drying temperature and rate of weight loss can affect the biosynthesis of nutritional compounds

Author Fabio Mencarelli, Bellincontro Andra, antelmi Giorgia and Isabella Nicoletti

Citation Abstracts Book, 6th International Postharvest symposium, 8-12 April 2009, Antalya, Turkey. 256 pages.

Keyword Biosynthesis; temperature; grape

Abstract

Aleatico grape bunches coming from plant irrigated and not irrigated were subjected to partial postharvest dehydration at 10, 20 or 30°C, 45% RH, and 1.5 m/sec air flow, until 40% of mass loss. Rate of mass loss was slightly higher (3-4%) in not irrigated sample at 10°C while the inverse was at 30°C, even though the difference was not significant. Sugars increased at 29, 31, and 6% respectively at 10, 20, and 30°C but significant difference was observed only at 20°C where irrigated samples had about 3% higher RI value. Total anthocyanins increase until 20% or 30% of mass loss at 20°C respectively in not irrigated and irrigated samples and then declined. At 10 and 30°C, anthocyanins decreased. Malvidin-3-glucoside was the anthocyanin more responsible for these changes. Catechin increased 4-folds in irrigated sample dehydrated at 20°C at 10% of mass loss and then declined. In not irrigated sample the increase was less. At 10 and 30°C no increase was observed. Trans-resveratrol had the same behaviour as catechin. Quercetin-3-O-glucoside increased at 20% of mass loss in not irrigated sample and at 30% of mass loss in irrigated one. Kempferol-3-O-glucoside showed the same behaviour of quercetin. At 10 and 30°C no increase were observed. It appears that irrigation can affect the water stress response during the postharvest dehydration but 20°C temperature of dehydration is the best temperature to increase significantly the content of functional compounds with partial grape dehydration (20-30%).