

**Title** Effect of storage on physicochemical parameters, phenolic compounds and antioxidant activity in grapes

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### **Abstract**

Consumption of grapes (*Vitis vinifera* L.) is beneficial to health. In addition to the nutrients such as sugars, vitamins and minerals, grapes are also rich in phenolic compounds and other natural antioxidants. However, very little information is available on effect of post-harvest handling and storage temperature on changes of the phytonutrients in grapes. The present work was done to investigate the effect of post-harvest storage using restricted ventilation (1–2%) polythene cluster bags/plastic boxes at ambient temperature and 2–4°C in the refrigerator, on physicochemical parameters, phenolics compounds and the antioxidant activity in grapes. A representative sample of grape bunches stored at ambient temperature without cluster bag/box was taken as control. It was found that the physiological loss in weight, total soluble solids and titrable acidity were gradually increased with storage period at ambient temperature up to 25 days and at 2–4°C up to 60 days, though the changes were relatively less in the samples stored in the bags and boxes as compared to control. The reducing sugars, total phenolics, flavonoids, procyanidin monomers and anthocyanins extracted in the aqueous methanol were significantly reduced ( $p < 0.05$ ) in the control sample with the increase in storage period till 10 days followed by gradual increase; however, relatively less variation was observed in the case of the samples stored in bags and boxes at both the temperatures. All the samples stored at 2–4°C showed much less percent polymeric color in the range of 8–11% as well as no significant variation in the procyanidin monomers content throughout the storage period of 60 days. The antioxidant activity analyzed for various samples correlated well with the total phenolics content of the respective samples. Thus, the storage-life and the antioxidants level in grapes could be well retained at low temperature storage using restricted ventilation packaging.