

# EFFECTS OF IMMEDIATE POST-HARVEST FREEZING CONDITIONS AND STORAGE TEMPERATURE ON THE COMPOSITION OF NORTON GRAPES

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## ABSTRACT

Norton is one of the most famous grapes widely planted in the state of Missouri. This research focused on optimizing the storage conditions and transportation methods in preserving frozen grapes for medium to long term academic research.

Composition changes of Norton grapes in juice and skins were analyzed for optimizing the transportation methods and frozen conditions. Three different transportation methods (on Regular Ice, Dry Ice and Liquid Nitrogen) and two different storage conditions (at -80 °C and -20 °C) were used to preserve grape samples. In this research, the grape quality characters (pH, titratable acidity, Brix) in grape juice were analyzed for the different treatments mentioned above over time (Fresh, 1 month, 3 months and 6 months). The phenolic compounds in grape skins: anthocyanins (Malvidin-di-glucoside, Malvidin-glucoside), phenolic acids (gallic acid, ferulic acid) and a stilbene (trans-resveratrol) were analyzed by High Pressure Liquid Chromatography (HPLC). The results indicate the composition and quality parameters were changed both in grape juice and skins under different conditions. The best condition for transporting and preserving Norton grapes was the treatment of transporting on regular ice and storing at -80 °C. This method is also practical for academic research, because it is economical and easily obtainable.