



CALIFORNIA  
TABLE GRAPE  
COMMISSION

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## California Table Grape Commission Freeze-Dried Table Grape Powder

### **Fresh grapes**

Fresh grapes contain about 82% water, 12-18% sugar, and 0.2-0.8% acid, mainly tartaric and malic acid. Grapes also contain numerous phenolic compounds, including simple phenols, simple phenolic acids, cinnamic acids, stilbenes, flavonoids, flavans, flavonols and anthocyanins. A standard serving size of fresh grapes is approximately 3/4 cup (126 grams).

Grapes are high in flavonoids and are particularly good sources of flavans. For example, the major phenolic compound in grapes is catechin, and they contain epicatechin, gallic catechin and epigallocatechin. Grapes also contain high concentrations of leucoanthocyanidin flavans of varied structure. Grapes are good sources of flavonols, primarily quercetin. Red and black grapes contain high amounts of anthocyanins.

### **Freeze-dried grape powder**

The freeze-dried grape powder is to be used for research purposes only. It is a composite of fresh red, green and black California grapes (seeded and seedless varieties), that have been frozen, ground with food-quality dry ice, freeze-dried, and re-ground using Good Manufacturing Practices for food products throughout. The powder was processed and stored to preserve the integrity of the biologically-active compounds found in fresh grapes. As with fresh grapes, the powder is known to contain resveratrol, flavans (including catechin), flavonols (including quercetin), anthocyanins and simple phenolics.

To estimate the amount of fresh grapes represented by the powdered preparation, moisture content must be taken into account. The dry powder contains approximately 1% moisture and fresh grapes contain approximately 82% moisture. Therefore, 100 grams of fresh grapes corresponds to approximately 18.2 grams powder. The powder is hygroscopic and should be stored in moisture-proof containers at -70°C. One serving of fresh grapes is 3/4 cup (126 grams), therefore 23g of grape powder is equal to one serving of fresh grapes.

### **Analysis of freeze-dried grape powder**

Each batch of grape powder has been analyzed for a number of phytochemicals. The analysis does not provide the full phytochemical profile of grapes, but gives information on several key components. A detailed powder information sheet will be provided to grantees when the grape powder is sent to them.

The phytochemicals analyzed include catechin and epicatechin (catechins); peonidin, malvidin and cyaniding (anthocyanins); kaempferol, isorhamnetin, and taxifolin (flavonols); and resveratrol (stilbene). A value for the total polyphenol content is also included.

A basic nutritional analysis and microbiological analysis are also included on the detailed information sheet for the grape powder.