Grape seed proanthocyanidins (GSPs) have been found to enhance the efficacy of L-arginine, an essential amino acid involved in various physiological processes, including the production of nitric oxide (NO). Nitric oxide plays a crucial role in vasodilation and blood flow regulation, contributing to cardiovascular health. Studies have demonstrated that GSPs can increase the bioavailability of L-arginine by protecting it from degradation, prolonging its presence in the bloodstream, and activating eNOS. This synergistic effect allows for a sustained release of L-arginine and a more prolonged production of nitric oxide, leading to improved endothelial function and overall cardiovascular benefits.

Why Monomers?

Efficacy of grape seed extract **depends on its proanthocyanidin profile**. In many studies it has been demonstrated that **Monomers (Catechin and Epicatechin) and oligomers up to three degrees of polymerization can be absorbed and bioavailable.**

In **Jeevan et al.**[1] study rats were orally administered grape seed extract (GSE) at a dosage of 300mg/kg, twice daily. LC-MS/MS analysis of blood samples revealed the presence of monomeric catechins and their methylated metabolites, along with proanthocyanidins up to trimers. Additionally, a novel tetra-methylated metabolite of dimeric proanthocyanidin (m/z 633) was tentatively identified in the urine of GSE-treated rats. Conclusive identification of (+)-catechin and (-)-epicatechin was achieved in brain samples using LC-MS/MS. These findings shed light on the absorption and bioavailability of Monomers and Proanthocyanidins.

The clinical studies conducted by the **innovators of Grape seed extract used grape seed extract rich in Monomers and short chain Oligomeric proanthocyanidins.**

1. Vinson JA et al study[2]

In this study the antioxidant efficacy of grape seed extract standardized to contain Monomers (19.8%) and Oligomers (69.8%) was compared to grapes, grape juice, red wine, and other grape seed extracts using an oxidation-reduction colorimetric assay. The study also evaluated the in-vitro model of heart diseases and measured plasma antioxidant levels using the RANDOX assay.

The outcomes of the study revealed the following results for the grape seed extract standardized to Monomers (19.8%) and Oligomers (69.8%):

I. It exhibited a superior antioxidant index when compared to the other tested samples.
II. There was a dose-dependent inhibition of low-density lipoprotein oxidation.
III. The RANDOX assay showed a significant increase of 12% in plasma antioxidant activity after 1 and 2 hours.

These findings highlight the potent antioxidant properties of the grape seed extract, particularly when standardized to contain Monomers and Oligomers, demonstrating its potential benefits in combating oxidative stress-related conditions, such as heart diseases.

2. Vigna JB Study[3]

The objective of this study was to assess the impact of a formulation of grape seed extract standardized to Monomers (15%) and Oligomers (80%) on the susceptibility of low-density lipoprotein (LDL) to oxidation in a group of heavy smokers.

The study employed a randomized, double-blind, crossover design involving 24 healthy male heavy smokers aged over 50 years. Participants were administered 2 capsules twice daily for a duration of 4 weeks in the first phase. Each capsule contained 75 mg of standardized grape seed extract and soy-phosphatidylcholine, while the placebo consisted of 75 mg lactose and soy-phosphatidylcholine. Following a washout period of 3 weeks, the participants underwent another 4-week phase with the opposite treatment. Blood samples were collected at the beginning and end of each phase and analysed for plasma lipids and LDL susceptibility to oxidation.

The study outcomes revealed significant reductions in oxidative indices, specifically the concentration of thiobarbituric acid reactive substances (TBARS), in subjects taking the grape seed extract formulation (-14.7% ± 21.1% vs. -5.0% ± 18.1%, $P < .01$) compared to the placebo and baseline values. Additionally, the lag phase, which represents the time until the initiation of LDL oxidation, was prolonged in the group taking the grape seed extract formulation (-15.4% ± 24.4% vs. -0.1% ± 16.0%, $P < .05$) compared to the placebo and baseline values. These findings indicate that the grape seed extract formulation effectively reduced oxidative stress and improved LDL resistance to oxidation in heavy smokers.

VINOMERIX is a grape seed extract with **high levels of bioavailable Monomers and Oligomeric Proanthocyanidins.** Its unique composition **enhances eNOS activation and protects L-arginine from degradation, leading to increased bioavailability and efficacy**. This unique combination may offer potential benefits for cardiovascular health and endothelial function.

References

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