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Red Wine Helps the Heart, But How?

Polyphenols like resveratrol and quercetin may work together to promote cardiovascular health

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It's one of the key debates in the study of wine and health: Years of evidence suggests that wine, consumed in moderation, improves heart and circulatory health. But is it the alcohol, or is there something particular to wine?

A recent wave of studies focusing on antioxidative compounds found in red wine—polyphenols like resveratrol, quercetin and various anthocyanidins—suggest that families of these compounds play a crucial role. On the other hand, a surprising new study from South Korea argues that the consumption of alcohol actually leads to the buildup of plaque in arteries, triggering coronary artery disease and raising the risk of heart attacks.

A study by Dipak Das of the University of Connecticut School of Medicine and Alberto Bertelli of the University of Milan, set to be published in the *Journal of Cardiovascular Pharmacology*, provides an overview of the current thinking on the subject by analyzing the results of various epidemiological and experimental studies that find that moderate drinking of red wine improves cardiovascular health.

Das and Bertelli began the study because, as they write in the report, "the experimental basis for such health benefits is not fully understood." Das has authored several studies examining the chemical composition of grapes. In this analysis, he finds that resveratrol, found in grape skins, as well as anthocyanidins, found in the seeds, are the primary reason behind circulatory benefits. This would explain evidence that red wine offers greater heart health benefits than white since red wine is in contact with seeds and skins during fermentation.

But the research industry is facing hurdles when it comes to developing red-wine compounds into a pharmaceutical product. Current research indicates that synthetic resveratrol must be ingested at very high doses before it shows an effect. How high? Equivalent to drinking tens to hundreds of bottles of wine per day. And yet moderate red wine consumption appears to reduce the risk of heart attacks, strokes and even Alzheimer's disease, according to the study. So, how does resveratrol work in red wine, but at such low doses?

After examining the results of 70 studies, Das and Bertelli theorize that, while in lab tests resveratrol has low bioavailability (meaning the body can only absorb a small percentage of the chemical when it's ingested), other red-wine compounds with higher molecular weights, namely quercetin, can "modulate the activity" of resveratrol, helping the body absorb the compound and store it for later use, namely in the liver and kidneys, thereby offering "significant cardiac bioavailability."

Under this theory, a synthetic resveratrol pill is unlikely to be effective at low doses. On the other hand, 450ml of Australian Pinot Noir, or three servings, is "more than sufficient to achieve plasma levels of resveratrol with the [concentrated] range of 100 nanomoles to one micromoles," an effective dose.

While previous studies suggest red wine is good for the circulatory system, a study from South Korea adds a note of caution concerning the alcohol in the beverage. The study, to be published in the journal *BMC Public Health*, looked at the drinking habits of 4,302 Koreans, ages 50 and older, searching for a relationship between daily alcohol consumption and the risks of arterial inflammation or plaque buildup on artery walls.

By comparing the results of ultrasonographs of the participants' carotid arteries to their drinking habits, they found that alcohol consumption seems to have little overall effect on both arterial tightness and clotting for women.

Men were a different story. Compared to nondrinkers, men who drank more than three alcoholic drinks daily

showed 97 percent higher prevalence of plaque buildup in the carotid artery. Those who drank less had similar amount of plaque as nondrinkers. The scientists admit that the exact relationship between arterial health and alcohol remains unclear, but they speculate that once fat begins to collect on artery walls, heavy drinking exacerbates the situation.