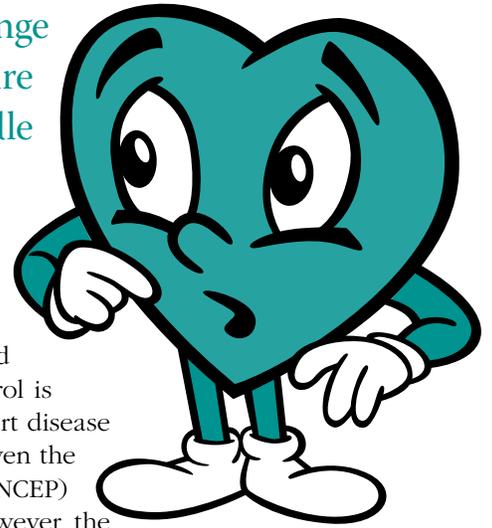


# Red Yeast Rice

by Margy Squires

**C**holesterol, red yeast rice and controversy. A strange mix of politics, protocol and yes, the people that are affected by all three. That red yeast rice is in the middle is curiously interesting and a story every person should know.



Let's start with cholesterol. Who needs it? Everyone. That's why your body makes 70% of your supply in the liver (the rest you get from diet). Cholesterol is used to form cell membranes, make hormones, insulate nerves and synthesize fat soluble vitamins for starters. But according to the Framingham Heart Study, initiated and with statistics from 1998 to the present, too much and the wrong kind of cholesterol is also a risk factor for cardiovascular disease and stroke.<sup>1</sup> Not a small problem as heart disease affects an estimated 80 million in the U.S. per the American Heart Association.<sup>2</sup> Given the figures, it seemed to make sense when the National Cholesterol Education Program (NCEP) executive panel lowered the guidelines for "desirable" cholesterol levels in 2001.<sup>3</sup> However, the recommendations also suggested the use of medication as interventional therapy for "undesirable" numbers. Since several members of the NCEP panel had vested interest in the companies making patented cholesterol-lowering medications ("statins"), the new recommendations set off sparks of controversy that continues today.

In fairness to the NCEP, they also suggest and offer a PDF (printable) booklet of "therapeutic lifestyle changes" they believe will help you in adopting healthy habits, including a 10-year coronary heart disease risk calculator online.<sup>4</sup> However, if cholesterol number crunching is still the primary target being aimed at, many health experts believe it's missing the mark. After all, cholesterol is a natural substance and if there's a problem, the answer involves more than playing a numbers game.

Let's briefly look behind the guidelines. Cholesterol is a specialized lipid composed of lipoproteins (lipids plus proteins). The low-density lipoprotein (LDL) is often called the "bad" guy because it is susceptible to oxidation, a step toward plaque formation and clogged arteries. Blood vessels should be flexible to allow for optimal blood flow but plaque causes "hardening" and vessel rigidity. HDL or "good" cholesterol is the balancing partner that helps carry off excess LDL to the liver for breakdown or excretion. The NCEP recommends an LDL of 100 ng/dL and HDL at 60 ng/dL as "desirable" to decrease the risk of cardiovascular disease or stroke.<sup>5</sup> Total cholesterol values are normal at 200 or under and "borderline" high from 200-239 ng/dL.<sup>6</sup> Another risk marker is your LDL to HDL ratio. (For more information, read *Cholesterol 101: Lessons from the Heart*).<sup>7</sup>

What about statins? Statins essentially block the enzyme HMG-CoA reductase that the liver uses to make cholesterol. By decreasing the amount of available cholesterol, statins are quite effective in lowering total and LDL numbers but not without risks.<sup>8</sup> Statins cause muscle tissue damage, resulting in a life-threatening condition *rhabdomyolysis* in about 10% of users, which can end in kidney failure and death. In fact, in 2001 Bayer pulled Baycol off the market due to adverse events that led to a class action lawsuit, with 100 deaths and 1,600 injuries cited to date.<sup>9</sup> Statins also affect coenzyme Q10 by blocking the pathways of this fat soluble antioxidant that provides essential muscle energy. One theory behind rhabdomyolysis is statin-related CoQ10 deficiency.<sup>10</sup> Statins may also cause elevation of several liver enzymes. This poses a potential risk to the very organ you need to facilitate the breakdown of excess fats, too. Perhaps incorporating more natural means of reducing cardiovascular risk may be a better answer?



Like cholesterol, red yeast rice (RYR) is a controversial subject. Based on studies in the late 1990s, RYR seemed an almost shoe-in replacement for current statin drugs to toggle "the numbers" without the risks.<sup>11</sup> However, in 1998 the FDA challenged the makers of one proprietary RYR product because it contained a substance chemically similar to and just as effective as that found in the patented lipid-lowering statin drug,<sup>12</sup> Mevacor. Since then, the FDA monitors RYR products very closely and pulled several off the market in 2007. Another issue involves RYR processing and the potential presence of a toxic byproduct, citrinin, that could cause liver problems.<sup>13</sup> Finally, most positive studies on RYR's ability to lower cholesterol were based on

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earlier products that contained the “drug” constituent. The conundrum is whether or not the RYR currently available today is still an effective and safe alternative. Apparently, despite its problems, researchers still believe it is a viable option.

A published study in June of 2009 seems to be earning RYR a little more respect. Investigators from the University of Pennsylvania profiled 62 patients who dropped their LDL cholesterol an average of 39 ng/dL in 24 weeks (Becker et al, *Ann Intern Med*, 2009).<sup>14</sup> These same participants had previously taken statins but stopped them due to muscle pain. During the study creatine phosphokinase (CPK) was measured as an indication of muscle tissue breakdown. Half of the participants were given three 600 mg of RYR twice daily, half placebo. Interestingly, RYR was combined with a 12 week lifestyle program (including education on diet, exercise and stress factors) and monitored. Even the placebo group had a modest 15 ng/dL drop in total cholesterol. No statistical significance in scores was seen for muscle pain, liver enzymes, CPK and weight loss. It seems lifestyle factors can make a difference, after all. What if you continued the program beyond 6 months? Study authors concluded that “red yeast rice and therapeutic lifestyle change decrease LDL cholesterol level without increasing CPK or pain levels and may be a treatment option for dyslipidemia patients who cannot tolerate statin therapy”. Perhaps even for those who’d rather not go the stain route?



Becker’s study is not the only study representative of RYR’s heart friendly benefits. See Conclusions from Studies, Reviews & Trials for more kudos.

### What is Red Yeast Rice?

The Chinese have used red yeast rice for 2000 years medicinally, including for circulatory disorders. RYR is derived from a fermentation process of the fungus *monascus purpureus* on white rice that produces active compounds called monacolins. Monacolins inhibit the HMG-CoA reductase enzyme that forms cholesterol in the liver similar to statins. Monacolin K (also called lovastatin) specifically resembles the chemical components of lovastatin and the FDA restricts claims for it in RYR products. New studies like Becker’s indicate that other RYR components mimic statin activity as well. Plus RYR contains naturally occurring fatty acids, antioxidants and other nutrients that offer additional benefits. RYR also may help inflammation by its ability to lower c-reactive protein.

### Beyond “The Numbers”

When it comes to the heart, numbers do not tell the whole story. Inflammation and excess free radical activity both appear to either damage blood vessels or contribute to LDL oxidation and plaque formation. Both are considered red flags for cardiovascular disease.<sup>15</sup> Additionally, periodontal disease is another seemingly remote but telltale risk marker.<sup>16</sup> In fact, anything that is happening elsewhere in the body that can travel via the blood and pumped through the heart is a potential flag. Thus, take your whole health picture into consideration before you initiate a plan of action. Know your genetic history and risk factors as one part of the plan.

### USE RYR WISELY

- ◆ Consult with your health care professional first
- ◆ Check cardiac risk markers, genetic history & blood tests\*
- ◆ Monitor results with repeat tests after 3 months (the time it takes for lipid changes to appear)
- ◆ Take CoQ10 daily (30 -100 mg)
- ◆ Make the appropriate lifestyle changes for diet, exercise, tobacco & alcohol use
- ◆ Use only products tested as citrinin free
- ◆ Consider liver supporting nutrients like alpha lipoic acid
- ◆ Take a multi-vitamin complex
- ◆ Monitor muscle symptoms & check CPK levels
- ◆ Note RYR warnings & cautions

\***Suggested blood tests:** Lipid profile, c-reactive protein, homocysteine

### Lifestyle factors do count.

The heart is not a solo act. High cholesterol is often found in diabetes and metabolic syndrome,<sup>17</sup> both of which are associated with magnesium deficiency.<sup>18</sup> Maintaining proper blood sugar levels is one number you should watch as a cardiac risk factor. Consuming a healthy diet that lowers liver overload (less fats, sugar, toxic substances like drugs, smoking and alcohol) are lifestyle changes that both health experts and NCEP advocate and agree on. Many nutritional supplements fall under lifestyle (some even carry FDA approved health claims). Taking CoQ10 which statins (and RYR) may decrease at 30-100 mg daily is important. Other beneficial supplements are addressed in *Cholesterol 101*.<sup>7</sup> They include dried and true garlic, niacin, plant sterols (like gugguls), policosanol and soluble fiber (psyllium, oat bran). Consider supporting the liver by the addition of alpha lipoic acid (ALA). Besides helping the liver synthesis and regulate fats and sugars, ALA



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is an important antioxidant that doubles for vitamins C and E, two more beneficial antioxidants.<sup>19</sup> Milk thistle is another liver supporter.<sup>20</sup> Studies of tocotrienols show that the Vitamin E form specifically is beneficial for heart vessel health.<sup>21</sup> Finally, omega-3 oils (fish, flax) are well known for their heart giving properties.<sup>22</sup>



### SUMMARY

Let's be honest. RYR can't make you live healthier. What you don't add to your diet and lifestyle in terms of toxicity can be a slow but effective health change for the better when coupled with what you do add in terms of supplementation. But if you're a basically healthy person who finds your cholesterol numbers are creeping up a bit and you want them in the NCEP's desirable range as a way of marking your progress, RYR can help you count the ways. Watch for more RYR benefits currently being investigated that support for Alzheimer's, hypertension, inflammation and osteoporosis.

*Warning: Persons who have liver disease, are currently on a statin or other medications and women who are pregnant, nursing or considering pregnancy should not take RYR without first consulting a medical health care professional.*

*Caution: Grapefruit juice may increase the effect of RYR.*

References omitted for space considerations and available by request to editor@e-tyh.com

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## Conclusions from Studies, Reviews & Trials

“Clinical trial evidence strongly supports the notion that both red yeast rice and plant stanols and sterols effectively lower low-density lipoprotein (LDL) cholesterol.”

McGowen MP, Proulx S  
*Curr Atheroscler Rep* 11/09

“*Monascus purpureus* (RYR) Went rice is a safe, effective and economic treatment strategy for nephrotic dyslipidemia (high lipids in kidney disorders).”

Gheitch et al  
*Clin Exp Nephrol* 6/08

“Red yeast rice reduces adverse cardiac events to a similar degree as the statins”.

Omg HT, Cheah JS  
*Chin Med J* 8/08

“Lifestyle changes combined with ingestion of red yeast rice and fish oil reduced LDL-C in proportions similar to standard therapy with simvastatin. Pending confirmation in larger trials, this multifactorial, alternative approach to lipid lowering has promise for a subset of patients unwilling or unable to take statins”.

Becker DJ et al.  
*Mayo Clin Proc.* 7/08

