

HERB OF THE MONTH: RED YEAST RICE & CHOLESTEROL

by Ann Gerhardt, MD (Subscribe to DrG'sMediSense at www.drsgmedisense.com) (07/2006)

Bottom line at the top: Red yeast rice works at least as well as purified statin drugs to improve serum lipid levels. Don't imagine that it accomplishes this by harmless magic: It contains lovastatin (brand name Mevacor) and other chemically active substances that require medical monitoring. Think of it as a drug.

What it is: Rice fermented by the mold *Monascus purpureus* is known as red yeast rice. The fermentation product contains monacolins, which lower cholesterol.

Monacolin K, one of the active components of red yeast rice, is produced by all *Monascus* species and some other molds. Other names for the *same chemical structure* are mevinolin and lovastatin (brand name Mevacor), the first FDA-approved statin drug. In the 1990's Merck, Sharp & Dohme researchers identified the chemical structure of monacolin K, calling it lovastatin, and revolutionized pharmacologic cholesterol control.

Compactin, a similar compound isolated from *Penicillium* molds, induces excessive toxicity in humans, but its chemically modified forms (Zocor and Pravachol) have been safe, effective and lucrative products for the pharmaceutical industry. The biggest money-maker of all, Lipitor, has an entirely synthetic structure based on the monocolins.

The Chinese have used red yeast rice since the Tang dynasty as an ingredient in rice wine, as a coloring (the red color of Peking duck) and flavoring agent and as an herb to treat indigestion, diarrhea and circulatory disorders.

Why it works: After conversion in the liver to the active form, all of the various monocolins and statin drugs inhibit the enzyme HMG CoA reductase, the first step of cholesterol synthesis in the human liver. Blocking this enzyme turns off the body's cholesterol production and induces the liver to pull more cholesterol out of the blood stream, thus lowering cholesterol levels in two ways.

More potent than Mevacor: Red yeast rice lowers LDL-cholesterol (the bad one) more than an equivalent dose of lovastatin. In studies of patients taking standard doses of red yeast rice, **LDL-cholesterol dropped by**

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20-30% in 8-12 weeks. These results are similar to those seen with higher doses of prescription lovastatin (The typical dose of lovastatin (monacolin) delivered by red yeast rice is 7.2 mg and the usual prescription doses of lovastatin are 10 – 40 mg).

In addition, the red yeast rice product **lowers triglycerides** (the circulating fats in blood) by 24-34% and **raises HDL-cholesterol** (the good cholesterol) by 14-20%. Pfizer claims that Lipitor lowers triglycerides and raises HDL, but the effect of it and all other statins is often minimal.

Composition: Red yeast rice products are mostly rice starch, with some protein, fatty acids, monacolins, ash, β -sitosterol, iron, magnesium and copper. The cholesterol-lowering components include eight different monacolins. Traditional red yeast rice contains smaller amounts of these substances than do proprietary forms. Some Chinese traditional preparations contain potentially toxic citrinic acid. The yeast in red yeast rice is inactive.



Because red yeast rice contains an approved pharmaceutical agent, its producers have been battling the Food and Drug Administration in court as to its status as drug vs. dietary supplement. So far it remains an unregulated dietary supplement.

Caution: Monocolins are degraded by liver enzymes. Grapefruit and many medications (such as antibiotics) and herbs (such as St. John's Wort) block the degradation, leading to increased drug levels. Since side effects are proportional to drug level, higher levels may lead to unacceptable consequences, such as muscle breakdown, kidney failure or liver toxicity.

For this reason, **red yeast rice must be treated as a drug, monitoring for safety by laboratory testing.** Physicians should test for CPK (muscle), urea nitrogen and creatinine (kidney), and ALT and AST (liver). It should not be used by pregnant or nursing women, people with or at risk for liver disease or individuals under the age of 20. Warfarin (Coumadin) dose requires adjustment after starting red yeast rice. No studies have lasted longer than 12 weeks, so long term safety is unknown.

By any other name: Other names for red yeast rice are red rice, red yeast, anka, ang-kak, ankak, angquac, beni-koji, beni-Jiuqu, aga-Jiuqu, aka-koji, xuezhikang, hung-chu and hongqu. Various companies (in parentheses)

market it as Cholestin (Pharmanex), Cholestol (Nutura), CholesteSure (Natrol), and Herbalin Ruby Monascus. Zhitai is red yeast rice produced from a mixture of non-purpureus Monascus strains and whole grain rice. Xuezhikang is a much more potent form of red yeast rice, made with alcohol and processed to remove most rice starch.

Dose: The usual dose of red yeast rice is 600 mg twice a day. It is best absorbed if taken immediately after a meal. As with all herbal products, since there is no industry standardization, the concentration of active components varies with each company's preparation. Chinese herbalists use much higher doses of traditional, typically less potent, red yeast rice preparations.