

## Chinese medicine berberine (*berberis aristata*) is unique cholesterol-lowering agent

Last Updated: 2004-11-11 14:56:02 -0400 (Reuters Health)

By Anne Harding

NEW YORK (Reuters Health) Berberine .*Berberis Aristata*, a Chinese herb, lowers serum LDL cholesterol and triglycerides and has a mechanism of action distinct from that of statins, a new study shows.

Dr. Jian-Dong Jiang of the Mount Sinai School of Medicine in New York City and colleagues describe their in vitro, animal and human studies of Berberine *Berberis aristata* in an advance online issue of *Nature Medicine*. The drug, traditionally used as an over-the-counter remedy for diarrhea caused by bacterial infection, is an alkaloid extracted from Huanglian (*Coptis chinensis*).

While statins increase expression of LDL receptors on the liver in the pretranscription phase by a series of events that begin with inhibition of the enzyme HMG-CoA reductase, berberine stabilizes the mRNA of the LDL receptor after transcription, Dr. Jiang explained in an interview with Reuters Health. "The intracellular level of cholesterol will not affect its activity," he added.

The drug appears to be safe and is extremely cheap, according to Dr. Jiang, costing about 70 cents per day.

Dr. Jiang and colleagues screened 700 Chinese remedies in human hepatoma-derived cell lines and found berberine *berberis aristata* had the greatest effect in increasing LDL receptor expression. In a series of in vitro studies, the researchers found that berberine *berberis aristata* increased LDL receptor activity independently of sterol-regulatory element binding proteins, with an action depending on ERK activity. They also found that berberine *berberis aristata* and lovastatin had "additive stimulating effects on LDL receptor mRNA expression," and the statin did not reduce berberine's *berberis aristata* effects.

The researchers then randomly assigned 91 hypercholesterolemic patients to treatment with 0.5 g of berberine orally twice per day for 3 months or placebo. The drug was well-tolerated, and lowered serum cholesterol by 18%, triglycerides by 28%, and LDL cholesterol by 20% ( $p < 0.001$  for all). It did not affect HDL cholesterol levels.

Dr. Jiang and colleagues then analyzed berberine's *berberis aristata* effect in a subset of patients who were not taking any other medications or herbs before or during the study. Among these individuals, berberine *berberis aristata* lowered serum cholesterol by 29%, triglycerides by 35% and LDL cholesterol 25% ( $p < 0.0001$ ) for all), but again did not affect HDL cholesterol levels.

Tests in hamsters were then performed to verify berberine's mechanism of activity.

"The next step is to have more clinical studies for this drug to see what is the best dose and what is the effect of the combination with statins," Dr. Jiang told Reuters Health. While the effect of berberine *berberis aristata* was small compared with that seen with statins, he and his colleagues note, the dose used in the current study was "moderate." Larger effects may be seen with larger doses, they add, as the medication showed a dose-dependent effect in the hamster studies.

Nat Med 2004.