

# Can Rice Bran Oil Melt Away Cholesterol?

## UR Studies Health Benefits of Natural Remedy

*May 11, 2005*

A natural component of rice bran oil lowers cholesterol in rats, and ongoing research also shows it may have potential as an anti-cancer and anti-infection agent in humans, according to a University of Rochester scientist who has studied the antioxidant since 1996.

The latest findings from Mohammad Minhajuddin, Ph.D., and colleagues, are reported in the May 2005 *Food and Chemical Toxicology* journal. They show that total cholesterol levels in animals dropped by 42 percent, and LDL or “bad cholesterol” levels dropped up to 62 percent, after their diets were supplemented with a concentrated form of Vitamin E called tocotrienol rich fraction or TRF isolated from rice bran oil.

Vitamin E, which has been widely studied for its health benefits, consists of both tocopherols and tocotrienols. Much research has focused on the tocopherols derived from corn, wheat and soybean. But the tocotrienols (TRF) seem to have greater antioxidant properties and are becoming more noteworthy in scientific research, Minhajuddin says. TRF is derived from barley, oats, palm and rice bran.

The best form of TRF comes from rice bran oil, which is contained in the outer grain hull of rice. Its properties inhibit the activity of HMG-CoA reductase, an enzyme involved in cholesterol biosynthesis. However, since taking any form of Vitamin E for a long time can be harmful, the purpose of Minhajuddin’s latest reported research was to find the minimum dose of TRF that provided the maximum antioxidants and effectively lowered cholesterol.

The results: The most effective dose in rats was 8 IU kg/day. Extrapolated to humans, a person with an average body weight of 154 pounds would get around 560 IU, which is close to the 400 IU of Vitamin E normally taken. (The upper tolerable intake of Vitamin E is 1500 IU).

Researchers have been investigating natural ways (besides diet and exercise) to achieve lower cholesterol levels, despite the popularity and effectiveness of statin drugs. Although millions of Americans take statins and do well, they are expensive and they come with side effects. So far, scientists have not found any adverse effects of tocotrienols, says Minhajuddin, a research associate in the UR Department

of Pediatrics.

Minhajuddin, who is from India, also has preliminary, unpublished data from a study he conducted in that country, showing that TRF reduces cholesterol in humans as well as in animals. Five healthy volunteers with total cholesterol levels in the “normal” range of 170-230 mg/dL, who ingested TRF in capsule form at a dose of 8 IU kg/day for four weeks, saw their cholesterol levels drop by 10 percent with a 26-percent decline in LDL-cholesterol levels. A case study of a 5-year-old boy in India, who had a genetic defect (familial hypercholesterolemia) that caused his total cholesterol to climb to 440 mg/dL, resulted in a 20-percent decline after about two months of tocotrienol supplements. The boy’s cholesterol did rise again, however, after 100 weeks of TRF supplements.

In addition, Minhajuddin and colleagues previously showed in animals that TRF reacts with liver enzymes in such a way that it clears toxic substances from the organ, and reduces or stabilizes liver tumors. The group concluded that long-term use of tocotrienol might reduce overall cancer risk, according to published research last year in the *European Journal of Cancer Prevention*. Currently, Minhajuddin’s research group is using a scientific model to study infection and the immune system, and how to regulate the expression of a gene called ICAM-1 on the surface of endothelial cells.

Much of Minhajuddin’s research on TRF was carried out in India until he joined the UR faculty in 2003. A Research Fellowship from the Indian Council of Agricultural Research, New Delhi, funded his work.