Chitosan supplementation lowers serum lipids and maintains normal calcium, magnesium, and iron status in hyperlipidemic patients

Fang-Hsuean Liao, Ming-Jer Shieh, Nen-Chung Chang and Yi-Wen Chien
Liao FH;Shieh MJ;Chang NC;Chien YW

Abstract

Chitosan is the most abundant natural amino polysaccharide and is being used as a new source of dietary fiber. The aim of this study was to investigate the effects of water-soluble and water-insoluble chitosan supplementation on blood lipid profiles and mineral status, including calcium, magnesium, and iron, in elderly hyperlipidemic patients. Sixty volunteers with serum total cholesterol concentration of greater than 5.2 mmol/L were randomly divided into 3 groups of 20 each. The treatment groups received oral chitosan, one group receiving water-soluble chitosan and the other receiving water-insoluble chitosan. They received 2 tablets (300 mg/tablet, with each tablet containing 52% chitosan). The third group was the placebo group. Supplements were given 3 times a day, before meals, for 8 weeks with no other dietary restrictions. Serum, 24-hour urine samples, and dietary records were collected and analyzed at 0, 4, and 8 weeks. Total cholesterol significantly declined by 7.5% in the water-soluble and by 8.9% in the water-insoluble chitosan groups over 8 weeks. Significant reductions in serum transferrin levels and mean corpuscular hemoglobin concentrations were observed after 8 weeks of water-soluble chitosan supplementation, but values remained within the reference range. In conclusion, both water-soluble and water-insoluble chitosan supplementation over 8 weeks lowered blood lipids and maintained normal calcium, magnesium, and iron status in elderly hyperlipidemic patients.