

高分子キトサンサプリメントの *in vitro* および *in vivo* における抗酸化作用

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Antioxidant properties of high molecular weight dietary chitosan *in vitro* and *in vivo*

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ABSTRACT: The effect of high molecular weight chitosan supplement (HMCS), a natural polymer derived from chitin, on indices of oxidative stress was investigated in normal volunteers. The use of HMCS for 8 weeks resulted in a significant decrease in total cholesterol levels and atherogenic index, and increased levels of high density lipoprotein (HDL) cholesterol. HMCS treatment also resulted in a lowered ratio of oxidized to reduced albumin and an increase in total plasma antioxidant activity. A good correlation between the atherogenic index and oxidized albumin ratio was found. The results suggest that the ratio of oxidized to reduced albumin ratio represents a potentially useful marker of the metabolic syndrome. In *in vitro* studies, HMCS slightly reduced the levels of two stable radicals in a dose- and time-dependent manner. The strong binding capacity of indoxyl sulfate and low density lipoprotein (LDL) cholesterol was also observed with HMCS. These results suggest that HMCS reduces significant levels of pro-oxidants such as cholesterol and uremic toxins in the gastrointestinal tract, thereby inhibiting the subsequent development of oxidative stress in the systemic circulation in humans.

抄録 健康人を対象に酸化ストレスに対する高分子キトサンサプリメント (HMCS) の効果を検討した。HMCS の 8 週間摂取により、総コレステロール、動脈硬化指数の有意な減少とともに、high density lipoprotein (HDL) の有意な増加が観察された。また、動脈硬化指数とアルブミン酸化度の方に良好な相関性が見いだされた。さらに、HMCS はインドキシル硫酸および low density lipoprotein (LDL) と強く結合することが判明した。これらの結果から、HMCS は消化管内でコレステロールや尿毒症性物質などの酸化促進剤の濃度を有意に下げることが示唆された。

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