

**Rate of excretion of secretory immunoglobulin A in human is enhanced by 4-week intake of chlorella**

Presented at the 9th Annual Meeting of the Japanese Society of Anti-Aging Medicine (2009)

**[Study Objectives]**

Secretory immunoglobulin A (SIgA) contained in saliva plays an important role in mucosal defense in the throat against invasion of pathogenic agents responsible for colds and influenza and other foreign substances. We performed a clinical trial to investigate the effects of chlorella intake on secretion of SIgA in saliva, since studies have reported enhanced immune function in rats and increases in IgA concentration in mother's milk following ingestion of chlorella.

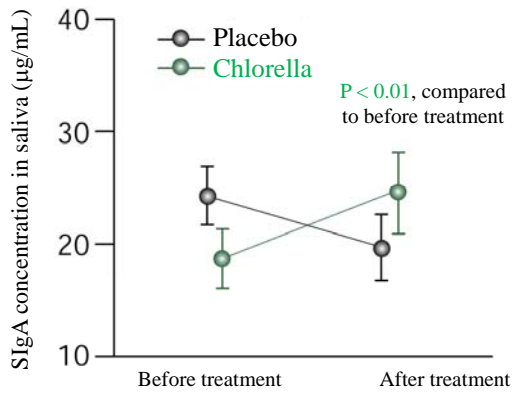
**[Method of experiments]**

A blind crossover trial was performed in 21 healthy men. The subjects received tablets of chlorella or placebo grains twice daily (15 tablets at a time, 30 tablets per day) for 4 weeks, and saliva samples were obtained from the subjects before and after treatment. Saliva samples were obtained with sterile cotton swabs chewed at a rate of once per second for 2 minutes. Rate of saliva secretion and SIgA concentration were measured for the samples obtained, and the SIgA secretion rate was calculated. The t-test was performed for comparison of findings obtained in the placebo (P group) and chlorella groups (C group) before and after treatment.

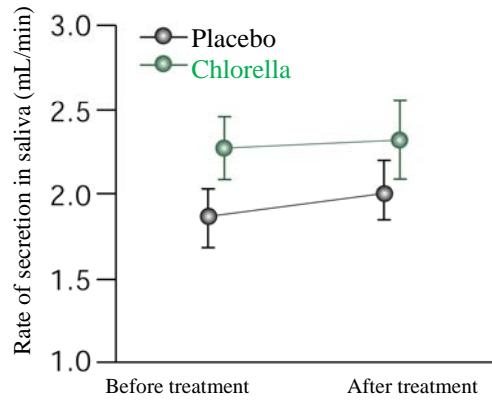
**[Results]**

The rate of intake of the test substances was  $97.0 \pm 1.0\%$  in the P group and  $95.2 \pm 1.4\%$  in the C group, and not significantly different between groups. Although there was no significant change in SIgA concentration before to after treatment in the P group ( $p = 0.19$ ), in the C group there was a significant increase in this parameter after treatment ( $p < 0.01$ ). There were no significant differences in saliva secretion rate before to after treatment in either group ( $p = 0.23$  and  $p = 0.73$  for the P and C groups, respectively). Although the SIgA secretion rate after treatment did not change significantly from that before treatment in the P group ( $p = 0.32$ ), it was significantly increased after treatment in the C group ( $p = 0.01$ ).

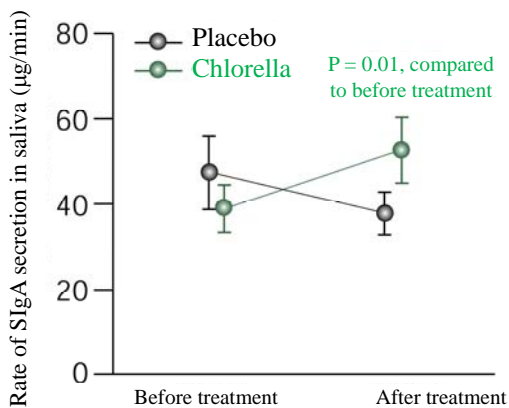
These findings suggested that SIgA concentration and rate of secretion in saliva were increased and immune function in the oral cavity was improved after 4-week treatment with chlorella.



SIgA concentration in saliva



Rate of secretion in saliva



Rate of SIgA secretion in saliva

### Presentation at a scientific meeting

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Title:	Rate of excretion of secretory immunoglobulin A in human is enhanced by 4-week intake of chlorella
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