

# Diabetes

J Med Food. 2001 Winter;4(4):193-199.

## **Role of Spirulina in the Control of Glycemia and Lipidemia in Type 2 Diabetes Mellitus.**

[Parikh P](#), [Mani U](#), [Iyer U](#).

Department of Foods and Nutrition, M S University of Baroda, Vadodara-390002, Gujarat, India.

Spirulina, with its high concentration of functional nutrients, is emerging as an important therapeutic food. This study aimed to evaluate the hypoglycemic and hypolipidemic role of Spirulina. Twenty-five subjects with type 2 diabetes mellitus were randomly assigned to receive Spirulina (study group) or to form the control group. At baseline, the control and study groups were matched for various variables. The efficacy of Spirulina supplementation (2 g/day for 2 months) was determined using the preintervention and postintervention blood glucose levels, glycosylated hemoglobin (HbA(1c)) levels, and lipid profiles of the diabetic subjects. Two-month supplementation with Spirulina resulted in an appreciable lowering of fasting blood glucose and postprandial blood glucose levels. A significant reduction in the HbA(1c) level was also observed, indicating improved long-term glucose regulation. With regard to lipids, triglyceride levels were significantly lowered. Total cholesterol (TC) and its fraction, low-density lipoprotein cholesterol (LDL-C), exhibited a fall coupled with a marginal increase in the level of high-density lipoprotein cholesterol (HDL-C). As a result, a significant reduction in the atherogenic indices, TC:HDL-C and LDL-C: HDL-C, was observed. The level of apolipoprotein B registered a significant fall together with a significant increment in the level of apolipoprotein A1. Therefore, a significant and favorable increase in the ratio of A1:B was also noted. These findings suggest the beneficial effect of Spirulina supplementation in controlling blood glucose levels and in improving the lipid profile of subjects with type 2 diabetes mellitus.

PMID: 12639401 [PubMed - as supplied by publisher]

**Spirulina maxima prevents fatty liver formation in CD-1 male and female mice with experimental diabetes.**

[Rodríguez-Hernández A, Blé-Castillo JL, Juárez-Oropeza MA, Díaz-Zagoya JC.](#)

Laboratorio de Análisis Clínicos, Hospital General de Zona No. 1, Instituto Mexicano de Seguro Social, UNAM, Ciudad Universitaria, DF.

The dietary administration of 5% *Spirulina maxima* (SM) during four weeks to diabetic mice, starting one week after a single dose of alloxan, 250 mg/Kg body weight, prevented fatty liver production in male and female animals. The main action of SM was on triacylglycerol levels in serum and liver. There was also a moderate hypoglycemia in male mice. The thiobarbituric acid reactive substances also decreased in serum and liver after SM administration. There was also a decrease in the percentage of HDL in diabetic mice that was reverted by the SM administration. The sum of LDL + VLDL percentages was also partially normalized in diabetic animals by the SM administration. An additional observation was the lower incidence of adhesions between the liver and the intestine loops in the diabetic mice treated with SM compared with diabetic mice without SM. Male and female mice showed differences to diabetes susceptibility and response to SM, the female being more resistant to diabetes induction by alloxan and more responsive to the beneficial effects of SM. It is worth future work of SM on humans looking for better quality of life and longer survival of diabetic patients.

Publication Types:

- Research Support, Non-U.S. Gov't

PMID: 11508645 [PubMed - indexed for MEDLINE]

Vopr Pitan. 2004;73(5):17-20.

**[Effect of food diet supplements with chromium on the clinical and metabolic parameters in type 2 diabetic patients]**

[Article in Russian]

[Sharafetdinov KhKh](#), [Meshcheriakova VA](#), [Plotnikova OA](#), [Mazo VK](#), [Gmshinskiĭ IV](#), [Nechaeva SV](#).

It was investigated the influence of food diet supplements with chromium on dynamic of glycaemia, lipid profile, blood pressure and weight in type 2 diabetic patients. Traditional hypocaloric diet was supplemented with chromium-spirulina (50 mcg chromium per day). The results investigations indicated that a chromium-enriched diet has beneficial effects on basal and postprandial glycaemia, the content of cholesterol and triglycerides in serum in compared with a traditional hypocaloric diet.

Publication Types:

- English Abstract

PMID: 15754482 [PubMed - indexed for MEDLINE]

Vopr Pitan. 2004;73(4):17-20.

**[Effect of a zinc-enriched diet on the clinical and metabolic parameters in type 2 diabetic patients]**

[Article in Russian]

[Sharafetdinov KhKh](#), [Meshcheriakov VA](#), [Plotnikova OA](#), [Mazo VK](#), [Gmoshinskiĭ IV](#), [Aleshko-Ozhevskii IuP](#), [Sheviakova LV](#), [Makhova NN](#).

It was investigated the influence of a diet with zinc supplementation on dynamic of glycaemia, lipid profile, blood pressure and weight in type 2 diabetic patients. Traditional hypocaloric diet was supplemented with zinc-spirulina (7.5 mg zinc per day). The results investigations indicated that a zinc-enriched diet has beneficial effects on basal and postprandial glycaemia, the content of cholesterol and triglycerides in serum in compared with a traditional hypocaloric diet.

Publication Types:

- Comparative Study
- English Abstract

PMID: 15460984 [PubMed - indexed for MEDLINE]

Zhongguo Zhong Yao Za Zhi. 2005 Feb;30(3):211-5.

**[Protective effects of polysacchride of *Spirulina platensis* and *Sargassum thunbergii* on vascular of alloxan induced diabetic rats]**

[Article in Chinese]

[Huang ZX](#), [Mei XT](#), [Xu DH](#), [Xu SB](#), [Lv JY](#).

School of Pharmaceutical Sciences, SunYat-sen University, Guangzhou 510275, China.

**OBJECTIVE:** To study the protective effects of polysaccharide of *Spirulina platensis* and *Sargassum thunbergii* on vascular of alloxan (ALX) induced diabetic rats. **METHOD:** With the doses of polysaccharide of *Spirulina platensis* (PSP) and *Sargassum thunbergii* (PST) compound (1:1) 12.261, 36.783, 110.349 mg x kg(-1) by i.g. administration to alloxan induced diabetic rats respectively for 6 weeks. Then the blood glucose and the TC, HDL-C, TG, NO, ET in serum were detected. The contraction and relaxation response to NE and ACh in aortic rings of the alloxan induced diabetic rats has been studied. **RESULT:** The results showed the compound of PSP and PST could decrease the blood glucose and the TC, TG, NO, ET in serum and increase HDL-C than in the alloxan induced diabetic rats. The contraction responses to NE in aortic rings of the alloxan induced diabetic rats were significantly elevated in the normal rats, and the responses to ACh were significantly lower. PSP and PST compound could significantly lower the responses to NE and significantly elevate the responses to ACh in aortic rings of the alloxan induced diabetic rats. **CONCLUSION:** PSP and PST compound could decrease blood glucose and could protect the vascular of alloxan induced diabetic rats.

Publication Types:

- English Abstract

PMID: 15719643 [PubMed - indexed for MEDLINE]