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**Study of Gynura Procumbens water extract effectiveness  
with the volunteer patients, suffering Type 2 diabetes, with inadequate glycaemic control  
during glucose reducing drug therapy**

There are more than 100 million (as predicted by WHO to their number in 2025 will increase to 300 million) diabetic patients. Currently, the prevalence of Type 2 diabetes in the population of developed countries reaches 4% among those aged 40 to 45 years and 18% - aged 65 to 75 years.

According to the Committee of Experts on diabetes at the World Health Organization, "diabetes and its vascular complications are ever-increasing burden of health care." The overall mortality rate among patients with diabetes are 2-3 times higher than the mortality rate in non-diabetic population, life expectancy in patients with diabetes for 5-10 years less.

Despite significant progress in the treatment of diabetes, the search for new effective and safe means of control hyperglycaemia and prevent the development of complications of this disease is an urgent task of modern medicine.

Medicinal plant Gynura Procumbens of the aster family is included in many national directories. During a few centuries that plant was used as a food and also as a remedy in eastern medicine against diabetes, hypertension, cancer, gastroenterological, cardiovascular and other diseases.

The last 15 years the plant has attracted the attention of scientific community at Malaysia, Indonesia, China, Thailand, Singapore, South Korea and Japan to justify its curing action.

Results of experimental research did confirm Gynura as the source of many powerful biologically active compounds, including flavonoids, carotenoids, alkaloids and essential oils.

Proven **hypoglycaemic (anti-diabetic)**, the action of this plant (Zhang, XF, Tan BKH, 2000; Akowuah GA, Amirin S., Mariam A. and Aminah I., 2001; Mohd Bohari, Siti Pauliena and Hamid, Muhajir and Shaari, Khozirah and Lajis, Nordin, 2006; Zurina, H., Yam, F., Ahmad, M. & Yusof, APM 2010; Chong Ching June et al., 2012; Chong, CJ, Lee, HW et al., 2012; et al., Lee, H., Hakim, P., 2012), **anti-inflammatory** (Iskander MN, Song Y. et al., 2002; Kim JL et al., 2011), free radical (Kim JL et al., 2011), **anti-carcinogenic** (Nunuk Aries Nurulita et al., 2012; Heng Wang et al., 2013), **hypotensive** (Mi-Ja Kim, Hee Jae Lee, Sumali Wiryowidagdo, Hye Kung Kim, 2006; Hoe SZ, Lee CN, Mok SL, et al. 2011; See-Ziau Hoe, Chen-Neng Lee et al., 2011; Kaur et al., 2012), antiulcerogenic (AA Mahmood, Abdalbasit A. Mariod et al., 2010), renal protection (Hee Jae Lee, Byung-Cheol Lee, 2007).

**Extracts from Gynura leaves prevent photo aging of the skin** (Kim JL et al., 2011), **normalize blood lipid profile** (Zhang, XF et al., 2000).

Obviously, the therapeutic spectrum of action of this plant is very wide, but in the available literature, we found only laboratory results and experimental studies. Application of Gynura Procumbens in clinical practice has not been described.

In our trials we did administer the water extract of Gynura Procumbens in a form of tea as a part of the diet.

The purpose of research - to study the effectiveness of Gynura Procumbens extract in patients with Type 2 diabetes with inadequate glycaemic control during therapy with hypoglycaemic agents as an adjunct to diet in the form of tea.



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**Materials and methods.** The trials were conducted on the basis of the medical centre of "Clinic of Endocrinology and Diabetes" (Perm, Russia).

We observed 12 people diagnosed with Type 2 diabetes. At 6 people as a co-diagnosis of hypertension is set, at 5 – hyperlipidaemia.

The patients' age - from 50 to 77 years, 7 women and 5 men. 11 people took hypoglycaemic agents (Glimekomb, Glyukofazh) as for several years prior to the study, as well as on the background of the broth.

In all patients, the dosage of ant diabetic therapy did not compensated sugar level to normal values.

Patients did consume 1 cup 2 times a day of Gynura Procumbens tea prepared as follows: a teaspoon of dried leaves boiled water, subjected to boil for 5-7 minutes, after straining taken on an empty stomach in the morning and evening for 1 hour before dinner. Course - 30 days.

With all patients daily fasting glucose level was determined by a glucometer, blood pressure was measured, blood lipid profile was determined before and after the course.

**Results.** From the 12 patients hypoglycaemic effect was observed in 9 persons. In 3 patients, fasting blood glucose level has not changed.

Patients who responded positively to the reception of Gynura tea, observed the following changes in the level of blood glucose: the average value of the group before the study was 7.8 mmol / L (normal 3.5 - 5.5 mmol / L) at the end of treatment - 5.9 mmol / l. The most pronounced decrease of glucose level was observed in women 56 years: before treatment - 12 mmol / l at the end of the course - a stable, 4.8 mmol / l.

Blood pressure from patients with initially higher values after Genera tea consumption was decreased to normal level, and one patient (male 75 years) noted several times too pronounced decrease in blood pressure, accompanied by dizziness.

The most spectacular case of positive dynamics of blood pressure was with a patient of 56 years old. Over the 40 years patient was suffering poorly compensated drugs hypertension, blood pressure was kept stable at the level of 190-200 mm with frequent crises to 220-230 mm. After consumption of Gynura tea pressure stabilized at 150-160 mm, significant health improvement was noted.

Lipid profile (total cholesterol, triglycerides) was exceeding normal value with 5 people. By the end of therapy, in 3 cases these indicators were reduced, in two cases there was no change.

In addition to these changes in 2 patients returned to normal sleep.

**Conclusion.** Gynura Procumbens tea has demonstrated visible ant diabetic effect, normalizes blood glucose levels, has antihypertensive effect and can be recommended as a supplement to the diet of patients with diabetes and hypertension. Data on the normalizing effect of Gynura tea on lipid profile was obtained on a small group of patients, this issue requires further study.

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