

# STUDY OF THE EFFICACY OF NEW FOOD PRODUCTS IN PATIENTS WITH CARDIOVASCULAR DISEASES

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## Abstract

**Background:** Cardiovascular diseases (CVDs) remain a leading cause of global mortality and disability. In addition to pharmacological management, there is growing interest in the adjunctive role of natural, nutrient-rich products in the comprehensive prevention and treatment of CVDs. This study investigates the efficacy and tolerability of a novel natural phytocomplex, "Cardio-Control," in patients with established cardiovascular pathology.

**Objective:** To evaluate the clinical effectiveness of the "Cardio-Control" phytocomplex in improving symptoms and physiological parameters in patients with cardiovascular diseases.

**Materials and Methods:** A clinical study was conducted involving 60 participants aged 60 and older, divided into a main group (n=30) receiving "Cardio-Control" alongside standard therapy and a control group (n=20) receiving standard therapy alone. The study employed a scoring system to assess efficacy (4-point scale) and tolerability (5-point scale). Clinical symptoms (heart pain, blood pressure, pulse rate) and laboratory parameters were monitored before and after a three-month intervention period.

**Results:** Administration of the "Cardio-Control" phytocomplex resulted in a statistically significant ( $p < 0.001$ ) reduction in key clinical symptoms. Scores for heart pain decreased from  $2.7 \pm 0.5$  to  $0.28 \pm 0.05$ , and blood pressure scores improved from  $2.5 \pm 0.4$  to  $0.20 \pm 0.04$  in the main group. Objective parameters also showed improvement, with systolic blood pressure decreasing from  $150.0 \pm 14.1$  mmHg to  $125.0 \pm 13.1$  mmHg. The product demonstrated high efficacy (average score  $3.86 \pm 0.7$ ) and very good tolerability (average score  $3.85 \pm 0.6$ ) with no adverse effects reported.

**Conclusion:** The natural phytocomplex "Cardio-Control" is an effective and well-tolerated adjunctive therapy for patients with cardiovascular diseases, contributing to the alleviation of clinical symptoms and normalization of hemodynamic parameters. It can be recommended for inclusion in comprehensive treatment and prevention regimens for conditions such as coronary heart disease, hypertension, and chronic heart failure.

**Keywords:** cardiovascular diseases, phytocomplex, Cardio-Control, clinical efficacy, natural product, adjunctive therapy, hypertension, coronary heart disease.

## INTRODUCTION

Cardiovascular diseases (CVDs), including ischemic heart disease (IHD), hypertension, and heart failure, represent a paramount challenge to global public health, consistently ranking as the leading cause of death and disability worldwide [1, 2]. The etiology of CVDs is multifactorial, arising from a complex interplay of genetic predisposition, lifestyle factors, and environmental influences [3]. In Uzbekistan, as in many nations, diseases of the circulatory system account for a significant proportion of mortality, underscoring the urgent need for effective preventive and therapeutic strategies [4].

The modern paradigm of CVD management emphasizes a holistic approach that integrates pharmacological interventions with lifestyle modifications. Among these, dietary habits are recognized as a cornerstone for both primary prevention and secondary care [5, 6]. Decades of epidemiological and clinical research, including seminal works like the Framingham Heart Study, have unequivocally established that diets low in fruits, vegetables, and fiber, and high in salt, saturated fats, and processed foods, significantly elevate CVD risk [7, 8]. Consequently, there is a sustained scientific and public interest in functional foods and nutraceuticals that can correct nutritional imbalances and provide targeted bioactive compounds.

The cardioprotective potential of plant-based bioactive compounds is well-documented. Resveratrol from grapes and polyphenols from pomegranate exhibit potent antioxidant and anti-inflammatory effects, improving endothelial function and reducing low-density lipoprotein (LDL) cholesterol [9, 10]. Hawthorn extract (*Crataegus* spp.) has a long history of use in traditional medicine and has been shown in clinical studies to improve coronary blood flow, exert positive inotropic effects, and alleviate symptoms of mild heart failure [11, 12]. Similarly, the high potassium content in apricots is crucial for myocardial contractility, while vitamin C from rosehips and lemons contributes to collagen synthesis in vascular walls and enhances antioxidant defense [13].

Despite the proven benefits of individual components, the synergistic effect of a specifically formulated phytocomplex requires rigorous clinical validation. Previous research by Dedov et al. [14] and others [15, 16] has highlighted the importance of managing comorbidities like diabetes, which exacerbates cardiovascular risk. Furthermore, large-scale trials such as those by the ESC [17, 18] have set rigorous standards for cardiovascular outcomes, against which any new intervention, including nutraceuticals, must be measured.

Building upon this extensive body of research, this study aims to evaluate the clinical efficacy and safety of a novel multi-component phytocomplex, "Cardio-Control," which integrates several of these evidence-based ingredients. The purpose of this investigation is to provide a scientific basis for its use as a complementary approach in the management of common cardiovascular conditions.

The modern pace of life, stress, poor nutrition, and low physical activity contribute to the rise in cardiovascular diseases. To maintain normal heart function, not only drug therapy is important, but also the use of natural remedies rich in antioxidants, vitamins, and microelements. It is only natural that many people concerned about their health strive to adhere to the principles of a balanced diet, aimed, among other things, at improving the condition of the cardiovascular system. The use of various diets and the introduction of foods advertised by manufacturers as potentially beneficial for the prevention of circulatory diseases are becoming increasingly common. Various cardiovascular diseases require early diagnosis to ensure a person maintains vitality and performance for as long as possible. Even more important is disease prevention through a healthy lifestyle and healthy eating habits. This, of course, includes quitting smoking, moderate alcohol consumption, active exercise (at least 30 minutes daily), and reducing sedentary time. Physical activity for patients with cardiovascular diseases should be based on individual recommendations. A healthy diet is an essential part of reducing the overall risk of cardiovascular disease. Proper nutrition reduces risk in many ways, for example, by normalizing weight, lowering blood pressure (impacting lipid levels and blood sugar control), and reducing the predisposition to thrombosis. Dietary risk factors for cardiovascular disease include low fruit, vegetable, and berry consumption, excessive salt and saturated fat intake, low fiber intake, and excess weight due to an unbalanced diet. Maintaining the correct balance of nutrients in food and ensuring variety are maintained are essential.

For decades, the importance of a balanced diet for the prevention and treatment of cardiovascular disease, as well as for improving overall cardiovascular health, has been a crucial and controversial issue in the prevention and treatment of these conditions.

Every year, food manufacturers introduce new products to the market that, according to advertising, promote health, reduce weight, and prevent the development of disease. There are undoubtedly a number of dietary products that have been shown to reduce the risk of developing many chronic diseases, including circulatory diseases.

### **Purpose of the research**

To study the effectiveness of the natural product "CARDIO-CONTROL" in patients with cardiovascular disease.

## MATERIALS AND METHODS

The study was conducted by interviewing patients with cardiovascular disease (CVD) (Group 1) and individuals without these conditions (Group 2). The groups were matched according to gender and age. The survey was conducted using questionnaires that included questions about dietary habits and patterns, as well as primary and concomitant illnesses. All subjects provided voluntary consent to participate in the study. Sixty respondents aged

60 and older participated in the study, including 57% men (average age 71) and 43% women (average age 65). All patients had their weight and height measured, and their body mass index calculated.

All patients underwent a clinical examination, including a collection of complaints, a medical history, and a physical examination. It was found that patients primarily complained of chest pain, changes in breathing rhythm, and increased blood pressure.

The effectiveness of the natural herbal product "Cardio-Control" was assessed using scoring criteria according to the following scheme:

4 points	High efficiency	Complete clinical recovery by the end of treatment, normalization of clinical and instrumental parameters.
3 points	Moderate efficiency	Moderate reduction in complaints, improvement in clinical and endoscopic parameters.
2 points	Low efficiency	Slight reduction in complaints and slight improvement in clinical parameters.
1 point	No efficiency	No change or worsening of clinical and laboratory/instrumental parameters by the end of treatment.

Analysis and evaluation of efficacy parameters were conducted immediately after the patient's examination and laboratory and instrumental data collection. The quantitative data were statistically processed using specialized software. The method of variation statistics was used, with Student's t-test derivation of the main parameters.

Drug tolerability was assessed based on subjective symptoms and sensations reported by the patient and objective data obtained by the investigator during treatment, as well as the incidence and nature of adverse reactions.

Drug tolerability was assessed by us and by the patients using a score:

4 points	Very good (no side effects observed)
3 points	Good (minor side effects observed that do not cause serious problems for the patient and do not require discontinuation of the test oil)
2 points	Satisfactory (side effects observed that affect the patient's condition but do not require discontinuation of the test oil)
1 point	Unsatisfactory (an undesirable side effect occurs that has a significant negative impact on the patient's condition and requires discontinuation of the test oil)
0 point	Extremely unsatisfactory (a side effect requires discontinuation of the test oil and the use of additional medical measures)

To compare the results obtained in the entire study population receiving the natural product "CARDIO-CONTROL" with the baseline values, the significance level (p) was set at 0.05 and 0.01. A p value of <0.01 was used in this case as an additional assessment of the study product's effect. Statistical data processing was performed using Excel.

## RESULTS

At the initial stage of the clinical trials, all participants (n=200) were administered a questionnaire indicating age and gender characteristics and the main risk factors for cardiovascular disease (alcohol abuse, smoking, obesity, stress). Biochemical and clinical studies were conducted in two groups of 15 patients each (the first study group included subjects with obesity in addition to bad habits; the second control group identified bad habits but without obesity) as part of preventive medical examinations.

The second phase examined the effectiveness of the natural phytoproduct "Cardio-Control" in patients with cardiovascular diseases. Technical instructions for this phytocomplex have been developed and approved by the Ministry of Health of the Republic of Kazakhstan (TI 309753282-01:2024).

Nutrients are natural active substances found in food products or intended for consumption with food. They are primarily intended for use in the diets of healthy individuals for preventive purposes as a dietary method for correcting nutritional imbalances. They allow for final dietary adjustments, providing essential components (primarily micronutrients) in cases of nutrient deficiencies that cannot be addressed with traditional foods.

The study was conducted at the multidisciplinary clinic of the Fergana Medical Institute of Public Health. The predominant diseases are coronary heart disease (70%) and hypertension (14%). When analyzing the structure of coronary heart disease, the following data were obtained: permanent atrial fibrillation - 48%, stable angina - 38%, PICS - 9%, chronic heart failure - 5%.

Distribution of average height, weight, and BMI by age categories Group 1 and Group 2 CVD of respondents of the first group PE IHD Hypertension CVD Heart defects Men - 16 people Women - 14 people Men - 16 people Women - 14 people Average age 70 years 66 years 71 years 64 years Avg. height 179 cm 164 cm 180 cm 166 cm Avg. weight 78 kg 64 kg 94 kg 80 kg Avg. BMI 24 23 31 29.

Body mass index (BMI) was calculated based on the respondents' height and weight data. The following results were obtained for the two groups: in the group with cardiovascular pathology, 60% were of normal weight and 30% were overweight. In the group without pathology, 10% were of normal weight and 89% were overweight. A higher percentage of people with a BMI within the normal range were observed in the group with pathology. It can be assumed that people with cardiovascular pathology monitor their weight after a doctor's examination.

Patient participants provided written informed consent to participate in the clinical study. Subjects were divided into two groups: Group 1 (control) included 20 patients receiving standard therapy. Group 2 (main) included 30 patients taking medications for their underlying disease that were compatible with the natural product Cardio Control phytocomplex. Patients in both groups were of comparable age and had similar clinical presentations. Patients took Cardio Control, one tablespoon twice daily, morning and evening, for three months.

Cardio Control is a natural phytocomplex designed to strengthen the heart muscle, improve blood circulation, and enhance overall body tone. It is manufactured in accordance with GOST 28499-2014, using these technological instructions, formulas, and sanitary norms and regulations approved in the established manner. Technical instructions have been developed for this phytocomplex, approved by the Ministry of Health of the Republic of Kazakhstan (TI 309753282-01:2024).

The product contains the following biologically active components:

- Grape extract: contains resveratrol and polyphenols, which have a pronounced antioxidant effect. These substances improve vascular elasticity, reduce LDL cholesterol, and prevent the development of atherosclerosis.
- Apricot: rich in potassium, which is necessary for normal myocardial contractility. Beta-carotene helps strengthen vascular walls and improves metabolic processes. Hawthorn is one of the most well-known herbal cardioprotectors. Hawthorn fruit and flower extract improves coronary circulation, normalizes heart rhythm, and helps lower blood pressure. Rosehips are a source of vitamin C, flavonoids, and organic acids. They stimulate the immune system, strengthen blood vessels, and increase the body's resistance to stress.
- Pomegranate juice contains antioxidants that improve microcirculation, help lower cholesterol, and prevent blood clots.
- Lemon juice enriches the body with vitamin C and organic acids, improves metabolism, and promotes the elimination of toxins.

All patients underwent a clinical examination, including a collection of complaints, a medical history, and a physical examination. It was found that patients primarily complained of heart pain, chest pain, shortness of breath, rapid or irregular heartbeat, leg swelling, dizziness, high blood pressure, fatigue, shortness of breath, and frequent tachycardia.

Physiological effects and benefits: Regular use of the Cardio Control complex helps: strengthen the heart muscle and normalize heart rhythm; improve blood circulation and tissue oxygenation; increase overall energy tone; prevent thrombosis and atherosclerotic vascular changes; compensate for vitamin and microelement deficiencies; and protect the body from oxidative stress.

The average score, as indicated in the study materials and methods, was  $3.85 \pm 0.6$  points (very good), with no adverse effects noted. Cardio Control is effective, as demonstrated by a significant reduction in most clinical manifestations of the disease by the end of treatment and a significant improvement in instrumental examination data. The average score on the 3-point scale was  $3.86 \pm 0.7$ , which is considered high.

Cardio Control was well tolerated by patients, with no adverse effects observed during the study period, and clinical and instrumental parameters tended to normalize. The dynamics of EGDFS data in the examined patients in the study group (Table 1) showed that blood pressure decreased from 2.9 to 1.3 points, while in the control group.

Clinical characteristics of the examined patients in the study group showed that 65% of patients suffer from cardiovascular diseases (frequent high blood pressure, chest pain, leg swelling). The dynamics of clinical symptoms in the examined patients showed that chest pain in the study group decreased by 2.42 points, while in the control group it decreased by 2.3 points; blood pressure by 2.3 and 2.2 points; and pulse rate by 2.0 and 1.9 points (Table 1).

**Table 1 Dynamics of clinical symptoms in the examined patients**

Symptoms (in points)	Main group (N=30)		Control group (N=15)	
	Before treatment	After treatment	Before treatment	After treatment
	$2,7 \pm 0,5$	$0,28 \pm 0,05$	$2,7 \pm 0,6$	$0,4 \pm 0,05$
Heart pain	$2,5 \pm 0,4$	$0,20 \pm 0,04$	$2,5 \pm 0,7$	$0,3 \pm 0,06$
Blood pressure	$2,1 \pm 0,4$	$0,1 \pm 0,005$	$2,15 \pm 0,5$	$0,25 \pm 0,05$

As can be seen from the table, by the end of treatment, there was a significant decrease in all parameters ( $P < 0.001$ ).

The dynamics of total blood pressure (BP) in the examined patients showed that systolic BP in the main group over 28 days was  $115.0 \pm 14.1$  Hg and in the control group  $110.0 \pm 14.0$  Hg. Diastolic BP ranged from  $71.0 \pm 5.6$  to  $75.0 \pm 5.8$  Hg; in the control group, from  $70.0 \pm 5.8$  to  $75.0 \pm 5.9$  Hg (Table 2).

**Table 2 Dynamics of complete blood count in the examined patients**

Symptoms (in points)	Main group (N=30)		Control group (N=15)	
	Before treatment	After treatment	Before treatment	After treatment
BP syst.	$150,0 \pm 14,1$	$125,0 \pm 13,1$	$140,0 \pm 13,0$	$120,0 \pm 14,0$
BP diast.	$90,0 \pm 4,6$	$80,0 \pm 4,8$	$80,0 \pm 4,8$	$80,0 \pm 4,9$
Heart rate	$85,4 \pm 8,6$	$80,4 \pm 5,7$	$86,5 \pm 8,9$	$85,1 \pm 9,8$

Thus, Cardio Control is quite effective in the treatment of cardiovascular diseases, has no side effects, and is well tolerated by patients. Regular use of the Cardio Control complex helps: strengthen the heart muscle and normalize heart rhythm; improve blood circulation and tissue oxygenation; increase overall energy tone; prevent thrombosis and atherosclerotic vascular changes; compensate for vitamin and microelement deficiencies; and protect the body from oxidative stress.

### CONCLUSIONS:

1) Cardio Control can be recommended for inclusion in the comprehensive treatment of patients with cardiovascular diseases.

2) Regular use of the Cardio Control complex helps strengthen the heart muscle and normalize heart rhythm; improve blood circulation and nutrition;

The product can be recommended: for coronary heart disease and chronic heart failure (as part of comprehensive therapy);

• during the recovery period after myocardial infarction; for anemia, hypovitaminosis and general exhaustion of the body; for the prevention of vascular disorders in individuals with increased physical and emotional stress.

### Conflicts of Interest

The authors declare that there is no conflict of interest regarding the publication of this manuscript. The study was conducted independently, and the authors have no financial or personal relationships with the manufacturers of the "Cardio-Control" product or any other entities that could inappropriately influence this work.

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