Metabolic syndrome (MS) is a multifactor clinical condition caused by a complex of genetic, neurohumoral factors and features of a person’s lifestyle. Prevention and non-pharmacological treatment of MS components should be directed to its correction and lifestyle modification in patients, treatment-preventive nutrition with the use of rating evidence base diets, increasing in physical activity, which will contribute to significant and simultaneously gradual decrease of body weight (BW), normalization of blood pressure (BP), lipid metabolism and inhibition of insulin resistance (IR). Pathophysiological mechanisms of development of such alimentary-dependent diseases as MS involve excess feeding of highly nutritious foods, cellular homeostasis violation, adaptive activation of enzyme systems, failure of their compensatory abilities, a profound shift of metabolism, enzymes adaptation to high-calorie food on new level. All these negative processes occur on the background of genetic constitutional predisposition of enzyme systems to endocrine function maladaptation of gastrointestinal tract and intestinal microbiota. The evidence base on dietary regime effects on correction of BW and prevent MS development was formed in well-known prospective studies, such as Framingham Study (1948-1975), the Stanford coronary risk study (SCRIP, 1994), INTERSALT (1982), TOMHS (1989), TAJM (1994). In the last decade (2000-2012) epidemiological studies series on primary prevention of cardiovascular disease (CVD), about the role of healthy diet and certain nutrients with H and MS were carried out (OMNI HEART, Mediterranean Diet, MUFA diet, ATTICA registry, EPIC, SUN, PREDIMED study, Adventist Health Study 2). Dietary guidelines for Americans for 2015-2020, among which a significant proportion has signs of MS, released on January 7 this year, received some changes. They restrict sugar consumption, define coffee as a part of balanced diet and not recommend reducing dietary cholesterol significantly. The positive impact of omega-3 fatty acids (FA) adequate levels in patients with MS components diet was proved. At the same time, any significant impact on the morbidity and mortality from the major components of the MS of diets enriched in beta-carotene component (Physician’s Health Study-β-Carotene Component, CARET), as well as vitamin E and antioxidants (CHAOS, UPS) not identified. Among food products that contain substances and components that improve endothelial function should be called isoflavones, polyphenols, stanols, folic acid, micronutrients-antioxidants, lutein. Vitamin C has a positive effect on endothelial dysfunction by reducing oxidative stress. The important role of magnesium in the development of MS in endothelial dysfunction was demonstrated. Favorable influence on the growth factors, IR and inflammation exercise foods are rich in MUFA and omega-3 FA from olive oil, wheat fiber, dietary fructans from agaves, blueberries. Chicory, olive leaf extract, glutamine, pea protein reduce postprandial hyperglycemia and lipidemia, inhibit appetite, regulate the action of receptors glucagon-like peptide-1, cholecystokinin, leptin, reduce hypoadiponectinemia.

The basic principles of diet therapy in MS: the accordance of calorie diet energy to requirements of body, considering age, gender, degree of physical activity; with control over quantity and qualitative fat composition in the diet; compliance with the total carbohydrates in the diet to energy requirements
of body; providing requirements for protein and essential amino acids (AK); pathogenetic balanced diet according to vitamin content, micro- and macroelements content, dietary fibers; with removal of extractives, with the exception of fried, canned food, spicy dishes, spices, salt; 4-6-course meal (the last – not later than 2-3 hours before bedtime). The diet balancing on base components: proteins 15%, fat <30%, carbohydrates 55-60% is recommended. It is necessary to arrange fasting days (2-3 times a week) up to 800 calories – yoghurt, apples, cottage cheese and yoghurt. The change of eating stereotype is important – more often and small portions – optimally in 3 main and 2 additional meals per day. In the outpatient setting to persons with MS can carry out one-day fasting, to assign reduced diet (Military-Air forces of the USA, Bunting, spectacled, Hollywood diet, a diet of Menden, Gradoc, Yutkin, Donaldson). Can also be used low- carbohydrate diet: the Atkins diet; the chocolate diet; food combining diet of Montinjac; mono diet (buckwheat, egg, chocolate); a low-fat and Paleolithic diet. Among this population are also used adapted Mediterranean Diet, TLC and DASH diets, Polymeal, Omni-Heart, the Mayo clinic diet, Weight Watchers, the features of their appointment in hypertension, atherosclerosis, lipid and purine metabolism disorders, obesity, diabetes type 2, as well as a brief summary recommendation on lifestyle modification and expansion of physical activity in these patients. In recent times, it has become the popular to determine candidate genes polymorphism in development of personalized diets for MS patients. Prolonged adherence of MS patients leading diet principles reduces the risk of cardiovascular complications, improves clinical course of the disease, and are the basis and guarantee of medicinal treatment success.