



Narodowe Centrum
Edukacji Żywnościowej



Centrum
Dietetyczne Online



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LIPID DISORDERS

Lipid disorders (dyslipidaemias) are defined as conditions in which the concentration of plasma lipids and lipoproteins does not correspond to values considered normal. In order to diagnose and monitor the treatment of dyslipidaemia, a lipid profile is delineated, which is a set of tests performed in plasma/blood serum. The lipid profile also provides an overall depiction of cardiovascular risk.

Target values for selected fasting lipid profile determinations:

- total cholesterol (TC) < **190 mg/dl (5.0 mmol/l)**;
- HDL cholesterol (HDL-C) > **40 mg/dl (1.0 mmol/l)** for men and > **45 mg/dl (1.2 mmol/l)** for women;
- triglycerides (TG) < **150 mg/dl (1.7 mmol/l)**.

Dieta

Lifestyle modification, including diet, is an essential element in the prevention and treatment of lipid disorders. In patients with low cardiovascular risk, lifestyle modification is a sufficient method of intervention, while in more severe cases it is introduced concurrently with pharmacological treatment. Dietary models based on the **Mediterranean diet, low glycaemic index diets and plant-based diets are applicable in the dietary therapy of lipid disorders**. They involve limiting animal fats and simple sugars, while increasing the amount of products in the diet that are sources of unsaturated fatty acids (oils, avocados, nuts, seeds), whole grain cereal products, vegetables and fruits. The diet should also take into account **the individual needs** of the patient. To this end, it is advisable to enlist the help of a dietician to support you in changing your eating habits.

* The risk is assessed by the doctor



Key nutritional recommendations

- 1 If you are overweight or obese, you should look towards gradual weight reduction. A comprehensive approach is recommended, including a diet based on healthy eating principles, maintaining an energy deficit and incorporating regular physical activity. The diet should always be **tailored to your needs and abilities**. The recommended routine is to eat 4–5 meals a day, at regular intervals (every 3-4 hours), including the last meal 2–3 hours before bedtime. A reduction of up to **5-10% of initial body weight** has a beneficial effect on lipid profile parameters and reduces the risk of cardiovascular disease.
- 2 Reduce harmful **trans fats** (hydrogenated vegetable oils) to a minimum. These are mainly found in: hard margarines, ready-made confectionery products, instant soups and sauces, salty and sweet snacks, fast food. This is particularly important in reducing the concentrations of total cholesterol and LDL fraction cholesterol and increasing the concentration of HDL fraction cholesterol.
- 3 Limit your intake of products containing **cholesterol and saturated fatty acids**. Instead of full-fat dairy products, choose skimmed and semi-skimmed equivalents containing up to 2% fat. Replace butter with soft margarines, preferably with added phytosterols and plant stanols. Choose lean meats, and replace meat twice a week with fish and at least once a week with legumes. Limit red meat to a maximum of 350-500 g per week and processed meats (cold cuts, sausages, pâtés, offal products, etc.) to as little as possible. Limit your consumption of eggs to one per day or 7 eggs per week.
- 4 Increase the intake of products containing **unsaturated fatty acids** (omega-3, omega-6 and omega-9 fatty acids). To ensure an adequate supply of these in your diet, eat fish at least twice a week, preferably sea fish (salmon, halibut, herring, mackerel). Choose vegetable fats - olive oil, canola oil, linseed oil. Add them cold to salads or other dishes. You can use refined vegetable oils (e.g. all-purpose canola oil) and olive oil for cooking meals. Nuts, seeds and avocados are also sources of unsaturated fatty acids. Consuming 30 g of nuts a day reduces the risk of incidents such as heart attack and stroke.
- 5 Consume adequate amounts of **vegetables and fruit**, which are sources of dietary fibre, vitamins and antioxidant components (e.g. vitamin C, beta-carotene, flavonoids). Eat vegetables as often as possible (**minimum 400 g/day**), preferably included in most meals of the day. Eat fruit in smaller amounts (**200-300 g/day**), as they contain more simple sugars. Berries, such as raspberries, blueberries, lingonberries, blackcurrants, strawberries and chokeberries, are preferred.
- 6 Increase your intake of **dietary fibre**, which lowers the concentration of total cholesterol and the LDL fraction in the blood. To do this, enrich your diet with vegetables, fruit, whole-grain cereal products and legumes. Every 7 g of additional dietary fibre is associated with a 9% reduced risk of coronary heart disease, and 10 g/day with a 16% reduced risk of stroke.
- 7 Limit your intake of sugar, sweets, jams and honey. **Simple sugars** are a substrate for the synthesis of triglycerides (TG) in the liver. Read the ingredients of groceries. Avoid those that contain sugar, glucose syrup, fructose syrup, glucose-fructose syrup, corn syrup, high fructose syrup.



- 8 Drink at least **1.5-2 litres of fluids a day**. Replace sweetened drinks with fluids without added sugar, especially water, and light teas and herbal infusions. Ensure regular hydration by drinking small portions throughout the day.
- 9 Aim to consume **2 g of phytosterols and stanols** per day, which can result in a reduction of LDL cholesterol and triglyceride (TG) fractions by around 7-10%. These compounds occur naturally in fruits, nuts, cereals and vegetable oils. They can also be added to products such as soft margarines, yoghurt and other dairy products. However, pay attention to the manufacturer's stated serving size providing 2 g of plant sterols and stanols, as a lower intake will not have a therapeutic effect.
- 10 The effect of the above-mentioned dietary modifications can be supplemented with the introduction of **selected dietary supplements**, such as red rice extract, berberine, omega-3 fatty acids, among others. However, always consult your doctor before deciding to start supplementation.

Physical activity

- 1 Activity can help to increase HDL cholesterol, which in normal concentrations has an antiatherogenic effect.
- 2 Ensure **regular physical activity**. If you have been inactive up to now, increase it gradually. Adjust the type, duration and frequency of exercise to your own capabilities. Consult a physical activity specialist or physiotherapist. The recommendation is to do at least 30 minutes of moderate exercise (e.g. walking, running, cycling or swimming) each day.
- 3 Undertake **spontaneous physical exercise**. Simple, everyday activities such as active housework are also beneficial for your health. The effects of exercise on the body may vary from person to person and from activity to activity. However, remember that any physical activity is better than no activity.

Other lifestyle elements

- 1 **Significantly reduce, and preferably completely eliminate, alcohol from the diet**. Data indicate the need to eliminate alcohol completely for people with hypercholesterolaemia and those with high triglyceride levels.
- 2 **Give up smoking**.
- 3 Look for the best way **to manage stress**. Relaxation techniques based on mindfulness and meditation, breathing exercises or yoga can be useful. If stressful situations escalate your anxiety and fears, consider consulting a mental health professional.
- 4 Ensure you get enough **quality and quantity of sleep** (7-9 hours a day). Try to go to sleep and get up at regular times (including your days off). Do not use electronic devices (phone, tablet, computer, TV) one hour before bedtime, which will make it easier for you to fall asleep.










References:

1. Banach M., Burchardt P., Chlebus K., Dobrowolski P., Dudek D., Dyrbuś K. et al.: Wytyczne PTL/KLRwP/PTK/PTDL/PTD/PTNT diagnostyki i leczenia zaburzeń lipidowych w Polsce 2021. Lekarz POZ. 2021(4): 1-111.
2. Czapała M., Jankowski P. (red.): Żywnie w chorobach serca. Wydawnictwo Lekarskie PZWL, Warszawa, 2022.











Recommended and not recommended products in lipid disorders

Remember that the overall composition of your diet, the combination of individual meals and the quality of the products you choose is important. The table below contains examples of products that should be the basis of your diet and those that you should reduce to a minimum. These are guidelines for changing your eating habits for the better.

Products group	Recommended	Not recommended
Vegetables 	<ul style="list-style-type: none"> all fresh and frozen 	<ul style="list-style-type: none"> vegetables with fatty sauces, roux
Fruit 	<ul style="list-style-type: none"> all fresh and frozen dried fruit in moderation 	<ul style="list-style-type: none"> candied fruit fruit in syrups
Grain products 	<ul style="list-style-type: none"> wholegrain flours whole wheat and graham bread natural cereal flakes: oatmeal, barley, spelt, rye wheat, rye, oat bran groats: buckwheat, barley pearl, bulgur, quinoa rice: brown, wild, red whole-grain pasta: wheat, rye, buckwheat, spelt 	<ul style="list-style-type: none"> refined flour confectionery breads, light breads (toast, Kaiser rolls, bread, butter rolls) breakfast cereals with added sugar (corn, chocolate, muesli, crunchy) small groats: couscous, farina, cornmeal white rice light pasta: wheat, rice noodles
Potatoes 	<ul style="list-style-type: none"> boiled oven baked 	<ul style="list-style-type: none"> potatoes with fatty additives like cream or butter fried chips, French fries potato pancakes fried in fat
Milk and dairy products 	<ul style="list-style-type: none"> reduced-fat milk (up to 2%) dairy products: natural (no sugar added), fermented, up to 2% fat (e.g. yoghurt, kephir, buttermilk, Skyr, cottage cheese, soured milk) skimmed and semi-skimmed Tvorog mozzarella light cheese for sandwiches (in moderation) 	<ul style="list-style-type: none"> whole milk condensed milk cream, coffee cream fruit yoghurts with added sugar, dairy desserts cheeses: full-fat cheese, processed cheese, feta, soft cheese (brie, camembert, roquefort), full-fat mozzarella, mascarpone
Eggs 	<ul style="list-style-type: none"> in moderation: soft-boiled, hard-boiled, poached eggs, scrambled eggs and omelettes fried with little or no fat 	<ul style="list-style-type: none"> eggs fried in large amounts of fat (e.g. butter, bacon, lard, сало (slanina)) eggs with mayonnaise
Meat and meat products 	<ul style="list-style-type: none"> lean meats without skin: veal, chicken, turkey, rabbit lean beef and pork (e.g. loin, tenderloin) in moderation lean cold cuts, preferably home-made: tenderloin, cooked ham, poultry cold cuts, roast pork loin, roast turkey/chicken breast 	<ul style="list-style-type: none"> fatty meats: pork, beef, mutton, goose, duck fatty cold cuts (e.g. gammon, salami, brawn, bacon, spam) canned meats, offal meats, pâtés, hot dogs, kabanos, sausages
Fish, fish products and seafood 	<ul style="list-style-type: none"> lean or fatty sea and freshwater fish (e.g. cod, sole, hake, blue grenadier, pikeperch, bream, pike, perch, mackerel, salmon, halibut, carp) in moderation, herring and other fish in vegetable oils, smoked fish 	<ul style="list-style-type: none"> canned fish, caviar
Legumes and legume products 	<ul style="list-style-type: none"> all, e.g. soybeans, chickpeas, peas, lentils, beans, broad beans legume spreads soya flour, soya drinks with no added sugar, soya products: tofu, tempeh pasta made from legumes (e.g. beans, peas) 	<ul style="list-style-type: none"> low-quality ready-made legume products (e.g. soya sausages, breaded soy cutlets, soya pâtés, veggie burgers)



Recommended and not recommended products in lipid disorders

Products group	Recommended	Not recommended
Fats 	<ul style="list-style-type: none"> olive oil, canola oil, linseed oil mixtures of butter with vegetable oils soft margarines margarines with added plant sterols and stanols 	<ul style="list-style-type: none"> butter and clarified butter in limited quantities lard, bacon, tallow hard margarines (blocks) tropical oils: palm, coconut mayonnaise
Nuts and seeds 	<ul style="list-style-type: none"> nuts (e.g. walnut, hazelnut, almond) seeds and pips (e.g. pumpkin, sunflower) 	<ul style="list-style-type: none"> nuts and seeds: salted, in chocolate, caramel, honey, sprinkles, breaded and in chips
Sugar and sweets, salty snacks 	<ul style="list-style-type: none"> dark chocolate min. 70% cocoa fruit purées, mousses, sorbets with no added sugar natural yoghurt with fruit, fruit yoghurt with no added sugar natural sweeteners (e.g. xylitol, stevia, erythritol) low-sugar jam kissels and jellies with no added sugar home-made baked foods with no added sugar 	<ul style="list-style-type: none"> sugar (e.g. white, cane, brown, coconut) honey, maple syrup, date syrup, agave syrup sweets with a high sugar and fat content (e.g. cakes, biscuits, chocolate bars, milk chocolate and white chocolate, halva, doughnuts, angel wings, sweets) salty snacks (e.g. chips, salty sticks, crispy flakes, crackers, nachos, crisps)
Beverages 	<ul style="list-style-type: none"> water drinks with no added sugar (e.g. coffee, cereal coffee, teas, herbal and fruit infusions, kompots, cocoa) vegetable and fruit juices in limited quantities home-made unsweetened lemonade 	<ul style="list-style-type: none"> alcoholic beverages sweetened carbonated and non-carbonated drinks energy drinks nectars, high-sugar fruit syrups drinking chocolate
Spices and sauces 	<ul style="list-style-type: none"> fresh and dried single-ingredient herbs (e.g. basil, oregano, herbs de Provence, turmeric, cinnamon, ginger) spice mixtures without added salt homemade salad dressings made with lemon, a small amount of oil or yoghurt, herbs sodium and potassium salt in limited quantities 	<ul style="list-style-type: none"> salt (e.g. table salt, Himalayan salt, sea salt) spice mixtures containing a high proportion of salt bouillon cubes liquid flavour enhancers prepared sauces
Soups 	<ul style="list-style-type: none"> soups with vegetable or lean meat broths whipped with milk up to 2% fat, yoghurt 	<ul style="list-style-type: none"> soups with fatty meat broths soups with roux, whitened with sour cream instant soups
Prepared meals 	<ul style="list-style-type: none"> mixes of frozen fruit and vegetables mixtures of groats and pulses instant oatmeal creamy soups ready-made stir-fry vegetable dishes Salt-free vegetable pastes and purées <p><i>*Read labels, compare ingredients and pay attention to added sugar, salt and fat content.</i></p>	<ul style="list-style-type: none"> fast food (e.g. toasted open-faced sandwiches, hot dogs, hamburgers, kebabs) frozen pizzas, toasted open-faced sandwiches ready-made foods in bread crumbs, fatty sauces, refined flours, etc. instant foods (e.g. sauces, soups)
Technological processing of food 	<ul style="list-style-type: none"> cooking in water, steaming (cereals, vegetables cooked al dente) grilling (electric grill, grill pans) baking in foil, parchment paper, sleeve, ovenproof dish frying without adding fat stewing without pre-frying <p><i>*Occasionally you can use a small amount of the recommended vegetable fat, e.g. olive oil or canola oil.</i></p>	<ul style="list-style-type: none"> deep-frying stewing with pre-frying roasting in large amounts of fat breadding



Example of a quality menu in lipid disorders

BREAKFAST:

Sandwiches with cold cut, mozzarella cheese and vegetables

- wholemeal rye bread
- lean poultry cold cut
- mozzarella cheese light
- tomato
- bell pepper
- lettuce

LUNCH:

Milk and fruit smoothie with oatmeal

- natural yoghurt 2% fat
- banana
- berries, e.g. raspberries, lingonberries, strawberries, blackberries, currants
- oatmeal

DINNER:

Grilled chicken with vegetables and pearl barley

- chicken breast
- pepper, herbes de Provence, thyme
- courgette
- aubergine
- red bell pepper
- olive oil
- pearl barley



AFTERNOON SNACK:

Vegetable sticks with hummus

- cooked chickpeas
- tahini paste
- garlic
- olive oil
- carrot
- kohlrabi

SUPPER:

Salad with baked salmon

- salad mix
- rocket
- cherry tomatoes
- broccoli sprouts
- baked salmon
- red beans
- red bell pepper
- olive oil
- pumpkin seeds

