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Overweight by visceral fat: what can be done to treat successfully?

Abstract

Being overweight is a sign of the times, especially in industrialized countries where a lot of industrially processed food is consumed. There are different types, of which the "big belly" is a striking sign of increased visceral fat. This type is largely resistant to therapy and requires special attention.

Two complementary treatment methods are presented here: A) elimination of insulin resistance with the help of four natural substances, B) a gentle ketogenic diet that lowers blood sugar and opens up the metabolic pathway of ketosis. Both methods can be combined and replace the injections currently in use, which have many side effects.

Keywords: overweight, visceral fat, weight loss, insulin resistance, ketogenic diet

Volume 14 Issue 3 - 2025

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Received: October 21, 2025 | **Published:** December 03, 2025

Introduction

There are different types of excess weight in the abdominal area. The most problematic is visceral fat, which accumulates around the abdominal organs, especially around the intestines. It is difficult to treat, i.e., to reduce weight.[1,2]

A waist circumference of 88 cm (women) or 102 cm (men) or more is considered to be a significantly increased risk of cardiovascular disease such as heart attack and stroke, as well as type 2 diabetes mellitus. This is related to the high hormonal activity of the adipocytes in this fatty tissue, which influences adipokines such as interleukin-6, leptin, plasminogen activator inhibitor-1, angiotensin, resistin, and tumor necrosis factor alpha, as well as adiponectin. A treatment often leads to the problem of the yo-yo effect, where weight is quickly regained after the weight loss program has ended.

Here two treatment approaches are presented to deal with this problem:

Topic A)

Based on the assumption that this is a case of insulin resistance in the cell membranes, the GLP-1 (Glucagon-like peptide 1) and GIP (Glucose-dependent insulinotropic peptide) receptors are activated. From a chemical perspective, GLP-1 receptor agonist remedies are used for this purpose.[3,4,5] They are Incretin mimetics and are a class of active substances within the antidiabetic drugs that were originally developed specifically for the treatment of type 2 diabetes mellitus. They mimic the effect of the body's own hormones GLP-1 and GIP. These are secreted in reduced amounts in type 2 diabetics, which reduces the incretin effect, i.e., the blood sugar-lowering effect. Products containing GLP-1 are now available on the market. However, it should be noted that the proteins are destroyed in the stomach. Therefore, enteric-coated capsules are required.

Another class of substances that also act via the incretin effect are gliptins, which block the breakdown of GLP-1 and GIP by inhibiting the enzyme dipeptidyl peptidase 4 (DPP-4). These drugs are expensive and have side effects, which is why it makes sense to find natural analogous substances.

Four of those are important (they should be used in highest qualities, only):

Ginger (Zingiber officinalis) from Peru.[6] There are special varieties in the Peruan highland: Renealmia L. f. (Syn.: Alpinia L. nom. rej., Amomum Ruiz & Pav. nom. rej., Ethanium Salisb. ex Kuntze nom. superfl., Gethyra Salisb. nom. nud., Peperidium Lindl. nom. nud., Siphotria Raf.). Of the approximately 75 species, most are found in the Neotropics, from the Caribbean islands to tropical South America. The best are from the Peruan regions of Satipo and Pichanaki. Ginger has an aromatic smell and a pungent, spicy taste. Its main components are an essential oil, resin acids, neutral resin, and gingerol, a pungent aromatic substance. Gingerol gives ginger its spiciness. Ginger also contains zingiberene, zingiberol, shogaol, and diarylheptanoids. In addition, ginger rhizome also contains the digestive, stomach-strengthening, appetite- and circulation-stimulating substances borneol, cineol, the pungent substances shogaol and zingiberene, as well as vitamin C, magnesium, iron, calcium, potassium, sodium, and phosphorus.

Maca (Lepidium meyenii) from Peru.[7,8,9] Maca is a hardy perennial plant cultivated high in the Andes Mountains, at altitudes from 9,000 to 14,500 feet. It has one of the highest frost tolerances among native cultivated species. The tubers are characterized by a high content of essential amino acids, and the iron and calcium content is higher than in potatoes. Maca tubers contain a high proportion of fatty acids, such as linolenic, palmitic, and oleic acid. They are rich in sterols and minerals. The dried tubers contain 13 to 16% protein and are rich in essential amino acids. Fresh tubers usually have a high content of iodine and iron, as well as small amounts of alkaloids, tannins, and saponins.

Quercetin (from Latin quercus, meaning "oak tree")[10–12] is a yellow plant-based natural pigment belonging to the polyphenol and flavonoid groups. As a 3-hydroxyflavone with four additional phenolic hydroxy groups, it belongs to the flavonoid subgroup of flavonols. Quercetin is an oxidation product[6] of the anthocyanin pigment cyanidin.[7] Since quercetin is mainly found in grape skins, the levels in red wine are higher than in white wine. Capers and lovage have high levels. Further in vitro studies have shown that quercetin inhibits the effect of the drug bortezomib through a direct chemical reaction between quercetin and the boron group.[13] Similar to allopurinol, it also inhibits xanthine oxidase and thus hyperuricemia, which could counteract gout.[13]

Quercetin could have an inhibitory effect on the virus SARS-CoV-2 responsible for COVID-19, as it inhibits the protease 3CLpro responsible for the replication of the virus.[14,15] Quercetin also inhibits the production of immunoglobulin E, prostaglandins, and leukotrienes.

Berberine is an alkaloid from the group of isoquinoline alkaloids.[16–19] It is found in plants such as barberry (Berberis vulgaris), which gave the alkaloid its name, goldenseal (Hydrastis canadensis), and Coptis chinensis. Berberine has antiseptic, fungicidal, antibiotic properties against some bacteria,[11,12] and antiprotozoal properties.[16] It is able to inhibit enzymes such as sodium-potassium ATPase by reacting with nucleophilic or anionic groups of proteins and nucleic acids, which is attributed to its quaternary structure (present in the iminium form).[17] There are reports of various medical applications for berberine, based on its supposed effects on, for example, sugar and lipid metabolism, blood pressure, and skin ulcers or sore skin.

The aforementioned combination of four substances is capable of activating and increasing GLP-1. Trials conducted by the author on patients with visceral fat obesity showed very good results. However, the medication must be taken regularly over a longer period of time.

Topic B)

This view is based on the fact that the keto diet has long been known to have a positive effect on weight loss. It is primarily a specific nutrition that is low in carbohydrates and high in fat.[13,20,21] When the body enters a state of ketosis, which can also be achieved by fasting for 12 hours and eating only one meal a day, the mitochondria adapt to this and prefer to derive their energy from ketone bodies which contain more energy.

Ketogenic diet is a diet used in medicine for therapeutic purposes. It involves reducing carbohydrate intake to such an extent that the body begins to meet its energy needs not from glucose, but primarily or exclusively from fat and the eponymous ketone bodies produced in the body from it, which serve as substitutes for glucose. The ketogenic diet is a carbohydrate-restricted, protein- and energy-balanced therapeutic diet that mimics some aspects of the starvation metabolism.

In the 1960s, it was discovered that medium-chain triglycerides (MCTs) produce more ketone bodies and thus more energy per unit of mass in the body than the predominantly long-chain triglycerides found in normal dietary fats.[13] MCTs are also absorbed more efficiently and transported more quickly to the liver via the (hepatic) portal vein instead of the lymphatic system.

However, this diet should not be overdone, otherwise it will have side effects. Several food components are listed here that should be preferred and eaten daily:

I. Oils, e.g. MCT oil (especially type C8), Coconut oil, Linen oil

II. Butter, cream (no further cow's milk products)

III. Goat milk products, e.g. cheese

IV. Blue berries, e.g. black current

V. Yellow plant pigments (polyphenols)

VI. Fiber, especially from bitter salads

VII. Seeds from fruits, e.g. grapes, grapefruits, papaya.

Overview

Foods with a high glycemic index should be avoided. Grain products, beans, fruits, and starchy vegetables should be reduced. If you look at a typical American breakfast, you will see that it does not meet these nutritional requirements. It contains too much wheat, milk, and sugar. In contrast, the English breakfast can be considered better, consisting of ham, fat, and egg dishes.

Most important are Medium-chain triglycerides (MCTs). They are triglycerides that contain medium-chain fatty acids. Medium-chain fatty acids include caproic acid (C 6:0), caprylic (C 8:0), capric (C 10:0), and lauric acid (C 12:0). These are saturated fatty acids that occur primarily in tropical vegetable fats such as coconut oil (approx. 60%) and palm kernel oil (approx. 55%) and in butter.[14]

Due to their shorter fatty acid chain length, MCT fats are relatively soluble in aqueous environments and can therefore be metabolized without bile acids. Their structure also does not require cleavage by pancreatic lipase (an enzyme of the pancreas). They are transported directly in the blood to the liver, bypassing the lymphatic system, where they are preferentially oxidized compared to conventional fats and more ketone bodies are formed.[8] The transport of medium-chain fatty acids (MCFA) to the mitochondria, the site of fatty acid oxidation, occurs independently of carnitine. The tolerable daily intake varies from person to person and is between 50–100 g.

Conclusion

Ideally, both treatment methods can be combined, with type **B)** as the basic diet and type **A)** as a supplement. This should make it possible to gradually reduce visceral fat and lose weight. Positive side effects include improvements in metabolism and prevention of diabetes mellitus. An excess of omega-6 fats relative to omega-3 fats should be avoided, omega-3 oils should predominate. Especially Gamma-linolenic acid and arachidonic acid should be avoided because they are unsaturated and can therefore act as radicals and can produce allergies. Overall, the two methods presented here are consumer-friendly and easy to implement.[15]

Acknowledgments

None.

Conflict of interest

The author declares there is no conflict of interest.

Funding

None.

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Citation: Doepp M. Overweight by visceral fat: what can be done to treat successfully? *MOJ Public Health.* 2025;14(3):290–292.
DOI: 10.15406/mojph.2025.14.00505

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Citation: Doepp M. Overweight by visceral fat: what can be done to treat successfully? *MOJ Public Health*. 2025;14(3):290–292.
DOI: 10.15406/mojph.2025.14.00505