A critical approach to fad diets and obesity drugs - the adoption of a healthy diet

Dimitrios Kouvelas, Michail Hourdakis, Dimitrios Papandreou, Despina Vassilakou

Department of Pharmacology, School of Medicine, Aristotle University of Thessaloniki, Greece

ABSTRACT: During the last years there is an increasing concern about nutritional issues, which has resulted in a vast amount of information from printed and electronic media about the different types of «healthy» diets or the «right» way for losing weight. Because of this trend, numerous types of diets have gained popularity, even though their main principles do not accompany with basic scientific data; numerous people follow certain diets, regardless of the possible risks for their health. Among diets which do not have any solid scientific base are the «blood type diet», the «very few calories diet», or even the «Atkins diet». In addition to that, the use of different types of «life style» drugs promises quick and effortless weight loss. However, the only real answer for those seeking for permanent weight reduction has and will always be the shift to a healthier way of eating and living. A balanced diet and moderate training will result in not only surprising but also permanent results.

Key Words: Fad diets, Obesity drugs, Healthy diet.

INTRODUCTION

In the developed countries the concern about dietary issues has been particularly wide in the recent years. Undoubtedly, the publicity in printed and electronic media constitutes sovereign means for influencing public opinion and the adoption of an attitude towards such an important issue as diet. However, various «promising» products and types of diet disorientate the public opinion. In the present article some of the most popular «myths» about diets and related drugs are presented. Clinical studies which support these «myths» proving their efficacy and their safety are not available.

Low Carbohydrate Diets

Among those proposed have been the Banting Diet (1863), The DuPont Diet by Alfred Pennington (1950), The Calories Don't Count Diet by Herman Taller (1961), The Doctor's Quick Weight Loss Diet, by Irwin Stillman (1968), and the most popular Dr. Atkins' Diet Revolution and its updates (1972, 1992, 2002).

The Atkins diet plan involves four phases: the «induction» phase, «the ongoing weight loss» phase, the «premaintenance» and the «maintenance» phases; it recommends unlimited protein and fat intake, with carbohydrate intake initially restricted to 20 g/day (5-10% of daily calorie intake), mainly as salad greens and other non-starchy vegetables.
In recent studies which lasted 6 months when diets low in carbohydrates and low in fats were compared, an increased weight loss was observed in the first group. However, when the studies lasted longer than 12 months the differences in the weight loss were not statistically significant. Moreover, any loss which is initially observed on the Atkins’ diet is due to the exhaustion of glycogen reserves of body storage that results in a greater loss of water.

A systematic review of low-carbohydrate diets found that the weight loss achieved is associated with the duration of the diet and restriction of energy intake, but not with restriction of carbohydrates. In a recent meta-analysis, results among the published studies showed that participants’ weight loss, while using low-carbohydrate diets, was principally associated with decreased caloric intake and increased diet duration, but not with reduced carbohydrate content.

Apart from the unremarkable results with regard to the weight-loss, the health risks from this type of diet should be pointed out. According to clinical studies, a diet rich in protein overloads the renal function and could harm the kidneys. Also, a diet rich in fat constitutes a potential danger for the development of cardiovascular diseases. Ketosis is not a marvelous gift of life, but a stressful situation for the organism.

Diet According to Blood Group

In the book «Eat right for your type» an «innovative» diet has been proposed. This diet which is conditioned by various conditions, that lack of any scientific evidence, proposes that each individuals diet should depend on his/her blood group (ABO system). The main theory is based on the idea that each blood group has its own unique antigen marker and this marker reacts with certain foods, potentially leading to various sorts of health problems. Furthermore, it is mentioned «that levels of gastric acidity and digestive enzymes are linked with one’s blood type; consequently, by following a diet designed specifically for one’s blood type, the body digests and absorbs food more efficiently resulting in weight loss».

In long-term, following this diet can result in poor intake of nutrients needed for good health. Nevertheless, clinical studies supporting that the blood group is related to nutrients, do not exist. Any further analysis seems to be unnecessary, since the main principles of the method are not based on sound scientific research.

A Strictly Low-calorie Diet

Strictly low calorie diet is «the diet on which significantly fewer calories than those required are received». This «self-evident» diet does not lay down concrete rules; during the day only one or even no complete meal is often consumed, aiming at a rapid weight loss. The diet is not recommended by any certain source, but those who follow that diet have the conviction that the less energy they receive, the higher their weight loss will be.

It is known that each person’s weight is medium- or long-term determined by the balance of energy. This is the algebraic relation between the received and the consumed energy. When the received energy is higher than the consumed one, the balance is positive and a weight increased is observed, and vice versa.

However restricting calories in order to achieve this goal is just an old fashioned technique. Food restriction can lead to a down-regulation of Resting Energy Expenditure (REE), so that energy can be saved. The body in its effort to decrease the basic metabolic needs, manages to save energy by decreasing or interrupting mechanisms that are less essential for the survival. In humans, dieting has been shown to cause menstrual cycle disturbances or reproductive dysfunction in normal weight healthy women. Nonetheless, malnutrition and the lack of essential elements, such as vitamins and metals, can be rendered important. This diet is dangerous not only for an individual’s body health, but also for the development of other psychogenic disturbances.

Diet of Combination

This diet groups all foods depending on different qualities, such as the flavor (sweet, bitter, sour etc.), the temperature (hot, cold) and the «peptic force». According to this, «parallel» foods with different characteristics should not be consumed; fruits should be consumed separately; the combination of a carbohydrate with a protein is not allowed; nonetheless, cold water should be avoided, because it causes stress.
to the organism. According to the above theory «a bad combination involves disturbances in the excretion of gastric liquid and abnormalities in the digestion; if this is repeated regularly, it may lead to illnesses, because of the production of toxins in the organism».

As it is obvious, this theory is being refuted by itself. With various «tricks», it creates safety rules in order not to be judged as unreliable. Moreover, no clinical incident of disturbance as a result of parallel consumption has been recorded. Nevertheless, a theory that is based on the significance of simple nutritional elements of foods should have taken into consideration the fact that all foods are a natural combination of the different food groups. For example, a slice of bread contains 15 g of carbohydrate and 2 g of proteins; a fact that proves that either the nature has not foreseen it (obviously incongruous) or simply that this theory is not valid.

**Monophagia**

Monophagia is a diet in which one type of food is usually exclusively consumed each day. It has not a fixed duration and is presented in various variants. For example, a person is asked to consume only vegetables or fruits with one or more species of fruits, etc. Another also widespread form of this diet is the one on which a different type (rice, or meat, or noodles, etc.) of food is consumed each day, in unlimited quantity, with a duration of 30-40 days.

The supporters of this type of diet consider that in this way the organism «gets free from toxins» and the gastrointestinal tract «is resting from complicated processes of digestion». It is also promises high weight loss.

Here enters the known and inviolate rule of diet that «the quality, does not help us put on weight, but the quantity does». The weight loss that is potentially observed is due to the fact that in absence of a variety, saturation comes faster and the quantity that is consumed is smaller, therefore a negative balance of energy is potentially achieved and the individual initially appears to have lost weight. If, however, the individual accomplishes to receive more energy than the one he/she consumes, then there will be a weight increase.

There are no clinical studies, which support that monophagias have any benefit to the peptic system. On the contrary, a strictly «fruit diet» which is rich in fibres may results in diarrhoeas, levitation and other peptic disturbances.

However the main danger of monophagia can be the lack of some micronutrients, and even of macronutrients. An individual that eats in this way for a long period could potentially not meet the Daily Recommended Intakes in vitamins, trace elements and other metals.

**Evidence Based Pharmacology of Obesity**

Pharmacotherapy for the management of obesity is primarily aimed at weight loss, weight loss maintenance and risk reduction, and has included thyroid hormone, amphetamines, phentermine, amfepramone (diethylpropion), phenylpropanolamine, mazindol, fenfluramines and, more recently, sibutramine and orlistat. These agents decrease appetite, reduce absorption of fat or increase energy expenditure.

There are only 2 drugs approved in Europe and USA for long-term obesity management, Orlistat (Xenical, Roche) and Sibutramine (Meridia or Reductil, Abbott). There are other noradrenergic drugs still available, though rarely used.

Orlistat (tetrahydrolipstatin) is a selective inhibitor of pancreatic and gastro-intestinal lipases. It reduces the digestion of dietary fat and its resorption through digestive mucosa (30%)\(^2\). It is indicated, at a dose of 120 mg with each meal (max 3 x 120mg/day) and together with a moderately low-calorie and low-fat diet. Data from clinical trials support that about 70% of patients will achieve 5% weight loss and at 2 years 70% of them will have maintained that loss. There are clinical trials documenting orlistat use for up to 4 years\(^22,23\).

After a high-fat meal, steatorrhoeal diarrhoea is expected. Deficiency of fat-soluble vitamins can occur, and vitamin supplementation should be used. Moreover, potential danger of inhibition in other lipase isozenymes (e.g. CNS), by orlistat, especially after long-term treatments, has to be precluded. In a recent meta-analysis of orlistat\(^2\), the estimate of the mean weight loss for orlistat-treated patients was 2.89 kg at 12 months. The adverse event analysis indicates a clinically significant increase in diarrhoea, flatulence and bloating, abdominal pain and dys-
pepsia. Moreover, headache, nausea and vomiting, gallbladder problems, depression and mood change can occur in orlistat-treated patients compared with placebo.

Sibutramine is a b-phenylethylamine with a cyclobutyl group on the side chain. Sibutramine is a reuptake inhibitor of serotonin, norepinephrine, and, to a lesser extent, dopamine from the synaptic gap. Sibutramine produces weight loss by a dual mechanism of action. It promotes satiety and increases energy expenditure, blocking the reduction in metabolic rate that accompanies weight loss. The usual starting dose is 10 mg, but the drug may be increased to 15 mg (or decreased to 5 mg if there are side effects) in one dose.

Placebo-controlled studies demonstrate successful weight loss maintenance with sibutramine for up to 2 years. In general, clinical trials inform us that about three-fourths of patients treated with sibutramine 15 mg/day will achieve 5% weight loss and 80% of those will maintain that loss for 2 years. About 5% of patients will not tolerate the drug because of adverse effects on blood pressure and pulse. Some patients (approximately 20%) are non-responders.

Sibutramine, like other sympathomimetic agents, produces a small increase in mean heart rate and mean blood pressure. Other side effects, including dry mouth, insomnia, headache and asthena, can occur. Sibutramine should be used with caution in patients with cardiovascular disease and in those taking selective serotonin reuptake inhibitors. It should not be used within 2 weeks of taking monoamine oxidase inhibitors (MAOIs) and should not be used with other noradrenergic agents. Sibutramine is not associated with valvular heart disease, primary pulmonary hypertension, or substance abuse.

A meta-analysis of sibutramine (2) reported a mean difference in weight loss of 4.45 kg at 12 months. Patients receiving sibutramine had a 20% to 30% greater likelihood of losing at least 5% of their body weight than did patients receiving placebo. Treatment with sibutramine is associated with modest increases in heart rate and blood pressure, very small improvements in glycemic control among diabetic persons, and small improvements in high-density lipoprotein cholesterol and triglyceride levels. Efficacy and safety beyond 2 years of treatment are unknown. Although no serious adverse events were reported in the clinical trials of sibutramine, we have to wait a little longer for proper evaluation of the safety of the drug.

**Healthy Diet**

The fact that the term «diet» usually refers to a temporarily situation, which should be adopted only for a certain interval time, is the main mistake in most people’s way of thinking. The equitable term is «right nutrition» and the duration is lifelong. As it has already become perceptible, miracle-working ways and magic diets that would effortlessly promote health and always ensure the ideal weight do not exist. There are, however, certain scientifically proven rules that involve both a high level of health and well being.

«Solutions», which lead to a rapid weight loss beyond the recommended rhythm, are transitory. Undoubtedly if more equitable alimentary habits are not adopted and naturally maintained, any change in one’s body weight is not to be preserved. In recent bibliography 5-6 meals per day are proposed to keep the metabolic rhythm high and the body weight stable.

In more detail, a healthy breakfast is essential so that the evening fast is not extended. Balanced food consumption for lunch, and a lighter dinner, both with variety of food items daily should be part of a healthy diet program. The person should have 2-3 snacks in between the 3 meals (one or two fruits, a small toast, or juice etc). In the every day practice intermediary snacks are considered negligible and often unnecessary, which is however wrong.

Additionally, not only the number of meals is important but also their content with regard to food groups. For that reason at least two portions of dairy products and another two portions each of fruits and vegetables for the intake of essential vitamins are important. The consumption of olive oil, which is rich in mono-unsaturated fatty acids and antioxidants, thus helping in the prevention of cardiovascular diseases, should not be omitted. Twice a week fish, rich in ω-3 and ω-6 fat acids should be included in the diet, as they constitute important antioxidant factors; having at least once a week legumes, and only one day per week consumption of red meat (pork or beef) are also part of the main guidelines for a healthier diet.
Because the objective is long-term, patience is required, since it becomes easily perceptible that no type of exaggeration helps. The objective is not to «get exhausted» in the first month and this requires particular attention. It can be considered that the quality is not the factor that helps us put on or lose weight, but the quantity of energy of the consumed food. Thus, any kind and type of food can and should be consumed in a long time interval, as long as it is in a reasonable quantity.

There should be no «prohibited foods» or foods eliminated from any diet. Foods rich in calories and/or saturated fats should be simply limited in quantity and frequency and not completely rejected because in that way there will follow over consumption after a short time interval.

The enormous value of physical activity should not be underestimated, not only during the weight loss process, but mainly for accomplishing the maintenance of it\textsuperscript{32}. Nevertheless, even if the ideal weight remains stable, the profits of exercising are various and important.

**CONCLUSION**

Miracle-working ways, magic diets and pills that would promote health and always ensure the ideal weight do not exist. Different diets are being held up as the «Holy Grail» of diets, but unfortunately there is no «Holy Grail» in obesity treatment\textsuperscript{33}. Human beings lose weight only when energy intake is less than overall energy expenditure.

People with different types of health problems should be more careful when it comes to losing weight, since various important health issues could arise when following a fad diet. Obese patient with type 2 diabetes mellitus are at risk for silent renal dysfunction, and a check of renal function is always prudent\textsuperscript{33}. Starvation is bad, and major restriction with provision of poor-quality protein results in cardiac deaths\textsuperscript{33}.

The use of drugs for weight loss has doubtful effects and is accompanied by certain specific risks. Because of its mechanism of action, orlistat can induce intestinal side-effects which tend to decrease with time and with the reduction of fat intake, thus improving diet compliance\textsuperscript{24}. Nevertheless, it is believed that the available drugs for pharmacotherapy of obesity do not have a clinically significant efficacy and well-evidenced safety. Their efficacy is poor (2.5 to 4.45 kg/year), considering that the absolute indication of drug treatment is for obese and not just overweight patients, the result is not permanent after the drug's withdrawal and therefore the safety has to be proved. In addition, even when on these drugs, certain dietary guidelines should be followed; the solution is a permanent change in dietary behaviours.

There are certain scientifically proven rules that involve both a high level of health and well-being. The great value of physical activity should not be underestimated. Everyone can ensure a good level of health and healthy weight, without any drug administration or spending time in difficult and exhaustive programs that are not evidence based, which expose the body and the mental health to risks.
Κριτική προσέγγιση των παράδοξων διατροφών και των φαρμάκων κατά την παχυσαρκία - Η νιοθέτηση ενός υγιούς διατροφικού μοντέλου

Δημήτριος Κουβέλας, Μιχαήλ Χουρδάκης, Δημήτριος Παπανδρέου, Δέσποινα Βασιλάκου

Εργαστήριο Φαρμακολογίας, Ιατρική Σχολή, Α.Π.Θ.

ΠΕΡΙΛΗΨΗ: Κατά το τελευταίο χρόνο παρατηρείται διαρκώς αυξάνοντας ενδιαφέρον σχετικά με διατροφικά θέματα, γεγονός το οποίο οδήγησε σε πλήθος πληροφοριών από τον έντυπο και ηλεκτρονικό τύπο σχετικά με τις διαφορετικές «ψηφινές» διατροφές και τους «ορθούς» τρόπους διατροφής. Αλλά αυτής της τάσης, διάφοροι τύποι διατροφής απέτρεψαν δημοσιεύση, παρόλο που οι βασικές τους αρχές δεν συμπέπτουν με τα επιστημονικά δεδομένα. Και ακόμη τα συλλογισμένα ανεξοριστής των πιθανών οικοδομών για την υγεία τους. Ανάμεσα σε αυτές τις διατροφές, εκείνες δεν σημαίνουν σε στερεοπλανική βάση είναι η "δίαιτα διαμέσου αίματος", η "κυκλική υποκατάληψη δίαιτα", ή κάκιμα και η "δίαιτα Απώλειας". Επεξεργαστής στα παραπάνω η χρήση διαφόρων τύπων φαρμακών υπόσχεται ταχεία και ξεκουμπώστρια απώλεια βάρους. Εντούτοις, η ισοδύναμη αλληλεπίδρωση για όσους αναζητούν τη μόνιμη απώλεια βάρους ήταν και εξακολουθεί να είναι η μετατροπή προς ένα υγιεινότερο τρόπο διατροφής και ζωής. Μια υποστηριζόμενη δίαιτα σε συνδυασμό με ήταν κατακτήσεις σημείο θα οδηγήσει οι ζωή σε εντυπωσιακά, αλλά και σε μόνιμα αποτελέσματα.

Ανέξω Κλειδιά: Παράδοξες δίαιτες, Φάρμακα, Ισορροπημένη δίαιτα.

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