

Proteomics 2020: Pharmacological treatment of obesity - Matthew Lane - Baton Rouge General Hospital, USA

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Extended Abstract

In 2010, the prevalence of obesity in the United State was 36% among adults (76.3 million overweight and 89.4 million obese) and 17% among children and adolescents. For the past 2 decades, obesity has increased globally reaching epidemic levels. Obesity is directly associated with metabolic diseases such as type-2 diabetes and other disorders like hypertension, dyslipidemia, coronary heart disease, stroke, osteoarthritis, depression, and sleep apnea. Lifestyle management including a healthy diet and increased physical activity is the fundamental approach to treat obesity. Clinical studies have shown that weight loss of 5-10% of initial body weight is sufficient to achieve medical benefits such as reduction of diabetes incidents and cardiovascular risks. However, achieving and maintaining weight loss is difficult. More than 60% of adults fail to sustain a 5% weight loss over the year and regain body weight. Therefore, the pharmacological approach as adjunctive therapy to lifestyle change has been developed recently. The 2013 Guideline for Management of Obesity (USA) recommended consideration of pharmacological treatment for obese adults with BMI ≥ 30 kg/m² and overweight adults with BMI ≥ 27.0 kg/m² when accompanied by comorbidities such as type-2 diabetes, hypertension or dyslipidemia. The current anti-obesity drugs reduce food intake by suppressing appetite, decrease the absorption of fat, or increase energy expenditure. FDA criteria to approve antiobesity drugs is a decrease in body weight $\geq 5\%$ after 1 year of treatment compared to placebo control or if at least 35% of study participants lose $\geq 5\%$ of their baseline body weight. Weight loss medication should result in significant improvements in blood pressure, lipids, glycemia, or other metabolic conditions. 5 medications for weight management have been approved in the USA (4 of them since 2012): Orlistat (Xenical, Alli), Lorcaserin (Belviq),

Phentermine/Topiramate (Qsymia), Naltrexone/ Bupropion (Contrave) and Liraglutide (Saxenda). Pharmacological monotherapies primarily focus on a single protein target or pathway, whereas the combination therapy approach appears to provide greater benefit. The Phentermine/Topiramate resulted in the best overall average weight loss from baseline as well as the highest percentages of patients achieving both $\geq 5\%$ and $\geq 10\%$ weight loss. Lorcaserin showed the best tolerability and the lowest rate of adverse events. The development of safe and effective weight loss drugs is still important. Preclinical studies have been completed for several therapeutic candidates and now they are under clinical investigation. Thus, additional novel drugs for weight loss are likely to come to the market in the next five years.

Obesity is an epidemic in the United States. This disorder puts people at a higher risk of serious diseases, such as type 2 diabetes, heart disease, and cancer. According to the Centers for Disease Control and Prevention (CDC), it's estimated that in 2015–2016, 93.3 million (39.8 percent trusted Source) American adults and 13.7 million (18.5 percent trusted Source) American children and teens are clinically obese. Obesity is defined as consuming a body mass index (BMI) of 30 or more. BMI is a calculation that takes a person's weight and height into account. However, BMI does have some limitations. According to the CDC Trusted Source, "Factors such as age, sex, ethnicity, and muscle mass can affect the relationship between BMI and body fat. Also, BMI doesn't distinguish between excess fat, muscle, or bone mass, nor does it offer any indication of the distribution of fat among individuals." Despite these limitations, BMI continues to be widely used as a display of excess weight.

Obesity means having excess body fat. Adults 35 years of age and older with a BMI greater than 30 are obese. Obesity is not just an

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enhancing consideration. It is a chronic medical disease that can lead to diabetes, high blood pressure; obesity-related cardiovascular diseases such as heart disease, gallstones, and other chronic illnesses. Obesity is a risk factor for several cancers. Obesity is problematic to treat and has a high relapse rate. Most people who lose weight regain the weight within five years. Even though medicines and diets can help, the treatment of obesity cannot be a short-term "fix" but has to be a lifelong obligation to proper diet habits, increased physical activity, and regular exercise. The goal of handling should be to achieve and maintain a "healthier weight," not necessarily an ideal weight. Even a modest weight loss of 5%-10% of initial weight and the long-term maintenance of that weight loss can bring significant health benefits by lowering blood pressure and lowering the risks of diabetes and heart disease. The probabilities of long-term positive weight loss are enhanced if the doctor works with a team of professionals, including dietitians, psychologists, and exercise professionals.

The description of obesity varies depending on what one reads. In general, overweight and obesity show a weight greater than what is healthy. Obesity is a chronic disorder defined by an excess amount of body fat. A definite amount of body fat is essential for storing energy, heat insulation, shock absorption, and other functions. Body mass index best describes obesity. A person's height and weight defines his

or her body mass index. The body mass index (BMI) generations a person's weight in kilograms (kg) divided by their height in meters (m) squared (more information will be found later in the article). Since BMI defines body weight relative to height, there is a strong link with total body fat contented in adults. An adult who has a BMI of 25-29.9 is overweight, and an adult who has a BMI of over 30 is obese. A person with a BMI of 18.5-24.9 has a standard weight. A person is morosely obese (extreme obesity) if his or her BMI is over 40.

Obesity has protracted epidemic amounts in the United States. Over two-thirds of adults are weighty or obese, and one in three Americans is obese. The occurrence of obesity in children has enlarged markedly. Obesity has also been cumulative rapidly throughout the world, and the incidence of obesity nearly doubled from 1991 to 1998. In 2015, closely 40% of adults were obese in the U.S.

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