168 - LEPTIN: OBESITY ANTI-HORMONE?

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INTRODUCTION

Obesity has been shown to be a problem worldwide, probably bigger than malnutrition. The vehicles of communication have been one of the influencers in social transformation, to lead to a "food clutter" associated with the persistence of high numbers of sedentary people. That many simple acts, such as climbing stairs, ride a bike, develop games for streets, performing household work manually, they are gradually leaving to be realized as often as before (BARBOSA, 2004).

Talk about obesity leads to present how it is classified. Our body weight is the sum of a set of bodies and fluids. We are composed of bones, muscles, organs, body fluids and known as adipose tissue, and therefore body weight composed of the junction of all these variables. These components are subject to change as a natural reflection of the growth, reproductive period, effects of aging, in addition to the variation in levels of physical exercise (MAHAN AND ESCOTT-Stumper, 2004).

To maintain a balance in body weight and the body needs to manage a complex system of neural mechanisms, chemical and hormonal balance between allowing the intake (absorption by the body) and its expense. Any abnormality in this operating system initiates the loss of homeostasis - mechanism that allows the body to remain in balance - resulting in excessive fluctuations in weight, incompatible with the ideal weight of each individual. Of these the best known are the overweight and obesity (MAHAN AND ESCOTT-Stumper, 2004).

From all these components, it is understood that whether the individual actually presents overweight or obese is not a simple task. So different models were developed to estimate body fat. Traditionally, a two-compartment model has been used by dividing the body weight and fat mass without fat or fat-free body. The fat mass combines all sources of fat body, including the fat in the brain, bones and fat, the fat-free mass is a tissue devoid of the entire extracting fat. The fat-free mass can be further divided into water, protein and mineral components (WAGNER AND Heyward, 2000 apud MAHAN AND ESCOTT-Stumper, 2004). It is noteworthy that although the component of lean mass (protein) also render the fat-free mass, they are different.

The lean mass, is based on Jensen (1992) apud Mahan and Escott-stump (2004), is part of the body without fat and includes the skeletal muscles, water, bones and a small amount of fat in vital internal organs, bone marrow and nerve tissue. Obeying the variables listed above, the fat-free mass is higher in men than in women due to muscle ratio, increases with exercise and is lower in older adults as a result of natural decline in human bodies. The muscle and skeletal mass to adjust to a certain limit in order to bear the burden of alternate fat.

As Pierson et alli (1997) apud Mahan and Escott-stump (2004) studies on the composition of excess weight gain showed that the fat-free body mass is responsible for an average of 29% of the excess weight. Of course we cannot characterize the fat as a "village" of the situation, because it can categorize them as "essential" or "stored". The essential fat, as the name says, is necessary for normal physiological functioning and is stored in small quantities in bone marrow, heart, lung, liver, spleen, kidneys, muscles and tissues rich in lipids in the nervous system, representing the men, About 3% of body fat and women about 12% because of contributory areas have, because of sex, such as breasts, thighs and pelvic regions. The stored fat builds up under the skin and around the internal organs to protect him from injury, is mostly considered consumable.

There are two processes that may characterize the obesity: hypertrophy (growth in the size of the cells already present when the fat is added) and hyperplasia (increase the number of cells), despite the hypertrophy remains dominant in this aspect (BRAY, 1990 apud MAHAN E-ESCOTT Stumper, 2004).

According Mahan and Escott-stump (2004) fat deposits can expand up to 1000 times only by hypertrophy, a process that can occur at any time if there is space available in the adipocytes.

Obesity is measured in different ways, depending on the accuracy required. The most common methods are the Body Mass Index (BMI) or Quetelet Index (weight/height2), where the weight is used in kilograms and height in meters (LEE AND NIEMAN, 1996 apud MAHAN AND ESCOTT-Stumper, 2004). The BMI takes into account differences in body composition when setting the level of adiposity according to the ratio of weight for height, thus eliminating the dependence of the size of the skeleton (Stensland and MARGOLIS, 1990 apud MAHAN AND ESCOTT-Stumper, 2004).

Obesity is classified into three grades of BMI: grade I (25 to 29.9), level II (30 to 40) and grade III (40 or more). Generally, a BMI of 27 or more indicates obesity and increased risk of developing health problems (BRAY et alli, 1976; GILMORE, 1999 apud MAHAN AND ESCOTT-Stumper, 2004). The new BMI standards published in 1998 to consider a BMI between 25 and 29 as overweight and a BMI greater than 30 as obese. A healthy BMI for adults are to be between 18.5 and 24.9 (CENTERS FOR DISEASE CONTROL AND PREVENTION, 2002 apud MAHAN AND ESCOTT-Stumper, 2004).

LEPTIN AND OBESITY

Based on the World Health Organization (OMS/2002-2003), obesity, ranked among the 10 major risks to health, is taking proportions of an epidemic, with more than 1 billion adults overweight, with 300 million obese. Children with overweight reach 17.6 million.

As National Health and Nutrition Examination Survey (NHANES, 1999-2000), in The Obesity Society, more than 64% of adults in the United States, aged between 20 and 74 years are overweight or obese and 31% are already obese. All this problem resulted in an expense of over 114 billion dollars between the years 1998 and 2000, causing a significant economic impact on the health care system in the United States by the Centers for Disease Control and Prevention (CDC apud NHANES, 2000).

It is important to note that obesity stems not only from a feeding hyper caloric because a cut in intake of foods should provide definitive reduction in weight and health refined. Unfortunately, the human obesity may be the result of a complex relationship of factors that include genetic influences, social, emotional, physiological, psychological and behavioral (DOUGLAS, 2001; GUO, 2008; ARAÚJO, 2008).

Studies have been done in order to find the possible causes of obesity, with expectations to reverse or even prevent your engine.

The term obesity (more precisely excessive adiposity) is defined as excessive accumulation of body fat and is a heterogeneous disorder with a final common pathway in which the energy intake exceeds the chronically dispended of energy (MCARDLE et alli, 2003).

The concept of adipocytes also as an endocrine organ arose from the discovery of a substance called leptin protein. This

occurred after occurring genetic mutations in mice justifying a better understanding of the genetic contribution to the regulation of body weight (DOUGLAS, 2001; GUO, 2008; ARAÚJO, 2008).

As Bouchard (1988) transmitted to the variable percentage body fat is 30% through cultural transmission, 25% by genetics and 45% non-transferable.

The mutation of a gene called fat, or only objective, deregulate the hormonal signals that regulate the metabolism of the animal, the storage of fat and appetite, so that there is an intentional imbalance to the accumulation of fat. The ob gene, activated in fat, stimulates the production of a peptide responsible for warning about body fat. The leptin is released into the blood, as the amount of fat in the body, then turns to centromedial nucleus of the hypothalamus - partly responsible for the control of appetite and metabolism - where ativarão leptin receptors on the synthesis of anorectic neuropeptides as POMC (Proopiomelanocortina), Á-MSH (hormone-stimulating the melanocytes), CRH (Corticotropin-releasing hormone) and CART (transcript Regulated by Cocaine and Amphetamine). The á-MSH is one of the most powerful amplifiers of metabolic signals in the human body, he would be responsible for sending messages to the brain of rapid and incisive to the burning of fat, their presence serves as another part of the messenger hypothalamus inhibiting the synthesis of neuropeptide Y (NPY), which stimulates food intake, in addition to inhibiting the thermogenesis (release of energy in the form of heat without producing ATP) (DOUGLAS, 2001; ARAÚJO, 2008).

The leptin is expressed mainly in white adipose tissue and a lower production of the substance in brown adipose tissue, placenta and stomach; in subcutaneous fat tissue, leptin is about 2-3 times higher than the visceral. Among the other places that leptin can be produced are the extra fat tissue as cast gastric mucosa, mammary epithelium and skeletal muscle. Its distribution is widespread in different tissues, and purified mainly by the kidneys, which explains the elevation of its rate in patients with renal failure (DOUGLAS, 2001; GUO, 2008).

The studies showed that the relationship between physical activity and plasma concentrations of these peptides is not yet clear. The reasons for this could be due to different training protocols used in physical education. Moreover, genetic differences may also explain the discrepancies between the results in humans, because the existence of polymorphisms in some genes can cause different cellular responses against the exercise (MOTA & ZANESCO, 2007).

FINAL CONSIDERATIONS

Over the years new cases have been found from searches conducted on the study of obesity and (s) can (s) factor (s) cause (s) of this great evil of new generations. The leptin may be one of the possibilities of reversing the current situation, since it is made possible to clearly understand their interference in human physiology as well as its contribution in reversing this alarming picture (the obesity worldwide), but the current data are not been enough to point an alternate path, and therefore become essential new research in this area on that theme.

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LEPTIN: OBESITY ANTI-HORMONE?
ABSTRACT

Obesity has reached much of the population regardless of social and economic classes. Its association with other fatal diseases has made it an issue of public policy. According to the Survey of Family Budgets (POF), the IBGE (2002-2003), are 38.8 million people aged 20 or older who are above the weight, which means 40.6% of total population of country, being in this group, 10.5 million obese. This study aimed to understand how the leptin in obesity may interfere in their process or trainer, from the analysis of its causes and possible consequences. This search feature is the second Thomas & Nelson (2007) as literature review, by embasar themselves into concepts and opinions of authors about leptin and its relation with obesity. It is believed that leptin has a direct influence in the regulation of food intake by Stimuli of negative feedback that is because the relationship between the reserves of fat and the center of satiety in the hypothalamus, mediated by the inactivation or reduction of some neuropeptides act as responsible by the food. Recent efforts have identified several neuropeptides to modulate food intake, appetite and energy expenditure. One of the best known is the neuropeptide Y (NPY), pancreatic polypeptide, very present in the nervous systems and when administered directly into the brain potently stimulates the ingestion of food and inhibits the calorie expenditure. It is, therefore, that despite the existing data on leptin and its performance against one of the greatest villains to health, yet it is increasingly necessary studies in this specific area, but now we know that leptin has a key role in the human body enables us to a healthier life and, concomitantly, quality of life.

Key words: Obesity, leptin, health.

LEPTINE: HORMONE ANTI OBÉSITÉ?
ABSTRACT

L'obésité a atteint une grande partie de la population, quelle que soit social et économique des classes. Son association avec d'autres maladies mortelles en a fait une question de politique publique. Selon l'Enquête sur les budgets familiaux (POF), l'IBGE (2002-2003), sont 38,8 millions de personnes âgés de 20 ans ou plus qui sont au-dessus du poids, ce qui signifie que 40,6% de la population totale de pays, d'être dans ce groupe, 10,5 millions d'obèses. Cette étude vise à comprendre comment la leptine dans l'obésité mai s'ingérer dans leurs processus ou un formateur, à partir de ses causes et ses conséquences possibles. Cette fonction de recherche est le deuxième Thomas & Nelson (2007), revue de la littérature, par embasar en eux-mêmes concepts et les opinions des auteurs sur la leptine et de sa relation avec l'obésité. Il est estimé que la leptine a une influence directe dans la régulation de l'ingestion d'aliments par des stimuli de rétroaction négative parce que la relation entre les réserves de graisse et le center de satiété dans l'hypothalamus, la médiation de l'inactivation ou la réduction de certains neuropeptides agir en tant que responsable par la nourriture. Les efforts récents ont permis d'identifier plusieurs neuropeptides de moduler l'apport alimentaire, l'appétit et la dépense d'énergie. L'un des plus connus est le neuropeptide Y (NPY), le polypeptide pancréatique, très présent dans les systèmes nerveux et quand il est administré directement dans le cerveau puissants stimule l'ingestion de nourriture et inhibe la dépense calorique. Il est, donc, que, malgré les données existantes sur la leptine et son exécution contre l'un des plus grands méchants de la santé, mais il est de plus en plus nécessaire études dans ce domaine précis, mais nous savons maintenant que la leptine joue un rôle clé dans le corps humain nous permet de nous à une vie plus saine et, concomitamment, la qualité de vie.

Mots clés: Obésité, leptin, la Santé.

¿ LEPTINE: HORMONA ANTI OBESIDAD?
RESUMEN

La obesidad ha alcanzado gran parte de la población, independientemente de social y económico clases. Su asociación con otras enfermedades mortales ha dejado una cuestión de política pública. Según la Encuesta de Presupuestos Familiares (POF), el IBGE (2002-2003), son 38,8 millones de personas de 20 años de edad o más que están por encima del peso, lo que significa 40,6% del total de la población de país, siendo en este grupo, 10,5 millones de obesos. Este estudio tuvo como objetivo entender cómo la leptine en la obesidad puede interferir en su proceso o entrenador, desde el análisis de sus causas y posibles consecuencias. Esta función de búsqueda es la segunda Thomas & Nelson (2007) como revisión de la literatura, por embasar en sí mismos conceptos y opiniones de los autores acerca de la leptine y su relación con la obesidad. Se cree que la leptine tiene una influencia directa en la regulación de la ingesta de alimentos por estimulos de retroalimentación negativa que se debe a que la relación entre las reservas de grasa y el centro de saciedad en el hipotálamo, mediado por la inactivación o la reducción de algunos neuropéptidos actuar como responsable por la comida. Los esfuerzos recientes han identificado varios neuropéptidos para modular la ingesta de alimentos, el apetito y el gasto energético. Uno de los más conocidos es el neuropéptido Y (NPY), polipéptido pancreático, muy presente en el sistema nervioso y cuando se administra directamente en el cerebro potente estimula la ingestión de alimentos e inhibe el gasto de calorías. Es, por tanto, que a pesar de los datos existentes sobre la leptine y su actuación contra uno de los más grandes villanos para la salud, sin embargo, es cada vez más necesarios los estudios en este ámbito específico, pero ahora sabemos que la leptine tiene un papel clave en el cuerpo humano nos permite una vida más sana y, concomitantemente, la calidad de vida.

Palabras clave: Obesidad, leptine, salud.

LEPTINA: HORMÔNIO ANTI-OBESIDADE?
RESUMO

A obesidade tem atingindo grande parte da população independentemente de classes sociais e econômicas. Sua associação com outras doenças fatais tem tornado-a um problema de ordem pública. Segundo dados da Pesquisa de Orçamentos Familiares (POF), do IBGE (2002-2003), são 38,8 milhões de pessoas com 20 anos ou mais de idade que estão acima do peso, o que significa 40,6% da população total do país; sendo, deste grupo, 10,5 milhões de obesos. O presente trabalho objetivou compreender de que maneira a leptina pode interferir na obesidade ou em seu processo formador, a partir da análise das suas possíveis causas e conseqüências. A presente pesquisa caracteriza-se segundo Thomas & Nelson (2007) como sendo revisão de literatura, por embasar-se em conceitos e opiniões de autores acerca da leptina e sua relação com a obesidade. Acredita-se que a leptina tenha influência direta na regulação da ingestão alimentar através de estímulos de retroalimentação negativa que acontece devido à relação entre as reservas de tecido adiposo e o centro de saciedade, no hipotálamo, mediado pela inativação ou redução de como atuam alguns neuropeptídeos responsáveis pela alimentação. Esforços recentes identificaram vários neuropeptídeos que modulam a ingestão alimentar, o apetite e o gasto energético. Um dos mais conhecidos é o neuropeptídeo Y (NPY), polipeptídio pancreático, muito presente nos sistemas nervosos e quando administrado diretamente no cérebro estimula potentemente a ingestão de alimentos e inibe o gasto calórico. Ressalta-se, portanto, que apesar dos dados já existentes sobre a leptina e sua atuação contra um dos maiores vilões à saúde, ainda faz-se necessário estudos cada vez mais específicos nesta área; porém já se sabe que a leptina exerce um papel fundamental no organismo humano possibilitando-nos uma vida mais saudável e, concomitantemente, qualidade de vida.

Palavras-chave: Obesidade, leptina, saúde.