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TECHNICAL ANALYSIS OF THE THERAPEUTIC EFFICACY OF INTRADERMOTHERAPY IN THE TREATMENT OF LOCALIZED FAT

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ABSTRACT

The need for a standard of human beauty has become a common phenomenon in society, causing the search for an ideal body and its reevaluation. Local fat is defined as a cellular disorder of the metabolism of fat cells or their abnormal growth, common in the main parts of the body, such as: thighs, abdomen and thighs. Intradermotherapy is a procedure that uses intradermal injections of highly diluted lipolytic agents into an area of localized fat. In

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addition, this study aims to evaluate the efficacy of intradermal therapy (Intradermotherapy) in the treatment of localized fat. For this, the methodology applied is qualitative and bibliographic, and the literature review took place through the google scholar database, PubMed, Scielo and other electronic information supported in the national territory.

Keywords: Intradermotherapy. Localized Fat. Intradermal injections.

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INTRODUCTION

Today, the beauty standards established by society and culture are associated with the search for more than different types of beauty treatments for the body or face. In addition, more than 2.5 million aesthetic procedures, surgical or non-surgical, were performed in Brazil (FERREIRA; READ; SILVA, 2016). The search for an ideal body and people's beauty demands have become the norm in society. Cultural, social, and personal models will eventually lead to low self-esteem, anxiety, and distorted body images, forcing people to pay more attention to their bodies and beauty (BRESCIA et al., 2011).

The body is being reevaluated and is directly related to self-motivation.This forces more and more people to adopt aesthetic procedures to achieve positive results and increase their self-esteem and happiness. In addition, the search and overvaluation of the ideal body came not only from female audiences, but also from male audiences, (ABIHPEC, 2015). A healthy and fit life is one of the main concerns of all walks of life, especially women. The beautiful body boundaries reflect the signs of the new order established at the beginning of this century and becoming increasingly popular: strong, slender, shapely and perfect bodies.

The current consumer society has not allowed them to get rid of the beauty standards it imposes, ignoring the various social disparities that exist. The image of the body is the way it presents itself. Through social media, the cultural industry is responsible for creating aspirations and valuing the image through physical standardization (RUSSO, 2005). The energy reserve of our body that has not been burned, and is often found in the abdomen and hip is called localized fat (GUYTON, 2006). It affects a large part of the population, being a problem for many people, especially women, who, in the search to eliminate it, opt for various treatments, including Intradermotherapy (MACHADO, 2011).

Localized fat is defined as a cellular metabolic disorder or abnormal growth of fat cells, often found in important parts of the body, such as the thighs. Its formation is associated with factors such as the number and location of fat cells, age, sex, diet, sedentary lifestyle, and genetic factors (MACHADO et al., 2017).

In terms of body shape, the main complaint of the female and male public is belly fat (SILVA et al., 2014). This audience uses diet and physical activity to improve body contour and result in volume reduction, but in some areas of the body this excess adipose tissue is very difficult to remove, so aesthetic procedures are indicated for this group (MACHADO et al., 2017).

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For faster results, methods are being developed to promote the loss of localized fat deposits. One of them is the intradermal injection of very well diluted lipolytic drugs (sodium deoxycholate or *phosphatidylcholine*) in the area where the fat is located. This technique is called intradermotherapy and is considered a method capable of helping to reduce the layer of adipose tissue.

Intradermal therapy is a medical procedure introduced by Pistor in 1958, which consists of the direct intradermal injection of highly diluted pharmacological substances into the treatment area (PISTOR, 1976; TENNSDEDT et al, 1997). This treatment causes the skin to become a reservoir where the deposited product activates the skin's receptor and slowly diffuses through the microcirculation. In addition, intradermal therapy has been proposed as treatments for local fat (LG), which is characterized by an increase in the volume of fat cells, compressing adjacent tissues, affecting tissue vascularization and promoting the entry of hernias into the directly overlapping dermis.

Due to the lack of methodological standards, the basic procedures for the use of intradermal injection in many studies vary. These are usually intradermal or subcutaneous injections of a drug or a mixture of products called mélange (MAYA, 2011). Such injections can be administered with a needle and a syringe or gun, and they obey the following angles 90°, 60°, 45° and 30°, with a maximum depth of 4 mm (AMIN, 2011).

Although the applicability of this method indicates a variety of clinical situations, this article focuses on the use of local fat dilute. Thus, the present study is justified given that, currently, the effectiveness of the technology can be observed with the use of tissue medications. This therapy has local drug effects, so it becomes interesting and innovative.

The justification for the theme is based on the fact that biomedicine, in general, is between biology and human health, focusing on research and analysis of human diseases, in the search for understanding the causes, effects, environmental and epidemiological factors; in order to develop and/or improve diagnoses and treatments (CAMPOS, 2006). Guiding its relationship with aesthetics, it is pointed out that Aesthetic Biomedicine, regulated in 2010 (Federal Council of Biomedicine), consists of a field that covers several advanced aesthetic procedures, whether or not they are invasive, where surgical and anesthetic instruments are used (MACÁRIO, 2014).

The choice of the theme came from the fact that it is something desired by many people, regardless of gender, despite women being the ones they covet the most. Since the female body is presented by the body as a body identity, bringing fat as a factor of

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change to fit into the social standardization (ANDRADE, 2003). The standardization of bodies occurs through the media. For this reason, individuals who do not conform to these standards feel dissatisfied. The contribution made by the media in presenting thin bodies as attractive makes society seek a standard of beauty based on idealized body appearance (RUSSO, 2005).

Over the centuries, beauty standards have changed, and the market for aesthetics and personal care grew significantly in the 1980s. In recent decades, in addition to establishing admiration for body images, the cult of the human body has also occupied the privilege of advertising (SOUTO, 2006). In this search, means such as Intradermotherapy are introduced by the subject in their decision-making. Being a current topic and of extensive debate, it is important to highlight that it is a technique of great relevance in the fight against the pathology discussed (GUIRRO & GUIRRO, 2004).

The relevance of the research is based on the fact that, in addition to discussing aesthetics linked to a current procedure, it provides information about a technique of thermal mechanisms (GUIRRO & GUIRRO, 2004). The theme is delimited in the action resulting from the use of intradermal therapy, being the search for an ideal body something constant, the subject himself constantly demands to be as the media presents, based on this assumption the problem question that governs the research is: "How does intradermal therapy act in the reduction of localized fat?"

METHODOLOGY

The present research will be qualitative and bibliographical, and for Gil (2008) this type of research is developed based on ready-made materials, consisting mainly of books and scientific articles. The literature review will take place through the google scholar database, PubMed, Scielo and other electronic information supported in the national territory.

The research covers a qualitative methodology of a bibliographic nature. According to Richardson (2008), this type of investigation facilitates the description of the problem, presenting possible solutions, analyzing the way it interacts with the variables and understanding the classification of some social processes. It provides significant contributions in the creation and/or formation of opinions of certain individuals and groups, reflecting on their particularities. It encompasses and portrays a reality that cannot be quantified.

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Minayo (2008) reports that qualitative research works with the world of meanings, as "all human phenomena that are part of a social context of a shared reality interact" (MINAYO, 2008 p. 34). It has a bibliographic nature that consists of reading the material already produced on the subject.

Gil (2008) points out that the bibliographic survey consists of the elaboration of a work through reading and exploration of others produced in recent or ancient times. A bibliographic search was carried out, the literary tracking was done by searching the electronic collection and electronic databases of scientific reliability. The inclusion criterion for the articles was the approach to intradermal therapy in the presence of localized fat.

In summary, the method used was a literature review with an exploratory qualitative approach, through searches in books and scientific materials from various databases for the elaboration of this material. The choice was of materials from 1990 onwards, those that did not deal with the theme were excluded. The search descriptors were: intradermal therapy, localized fat and aesthetic biomedicine.

RESULTS

Adipose tissue is distended connective tissue, and its main cellular component is fat cells, which are fibroblast-derived cells that store extra calories in the form of triacylglycerol. In addition to its important function as the body's main energy storage, adipose tissue also supports and protects different organs, acts as a thermal insulator and secretes many cytokines that regulate various functions (FONSECA-ALANIZ et al., 2006).

The structure of adipose tissue shows that fat cells are found in the diaphragm of connective tissue, which have the function of connecting the reticular dermis and muscle fascia. This organizational structure also shows gender differences. In men, these diaphragms are more rigid, are diagonal and contain small fat cells, while in women they are vertical, more distended and contain larger fat cells (RIBEIRO, 2011). Your metabolism is controlled by the nervous system and by hormones and system. The metabolism of adipose tissue involves several different phases: lipogenesis, which is the lipid formation phase, and lipolysis, which is the lipid removal phase (FÁBRIS et al., 2009).

Lipogenesis comes primarily from the metabolism of glucose and fatty acids in the blood. The mechanism of lipolysis is different, involving many enzymes, hormones and membrane receptors, which mobilize accumulated lipids and convert them into free fatty

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acids, which can be sent to the cellular mitochondria or to participate in metabolic processes (BORGES, 2013).

The sympathetic and parasympathetic nervous system also affects the metabolism of adipose tissue. Activation of the sympathetic nervous system stimulates lipolysis. Parasympathetic activation, on the other hand, has anabolic effects, such as insulin-stimulated glucose and fatty acid uptake (BORGES, 2013). In addition, for triglyceride lipolysis to occur, specific cell receptors must be stimulated. Under physiological conditions, they are stimulated by the lipolytic hormone, which activates adenyl cyclase in the cell's mitochondria and converts it into adenosine triphosphate (ATP) (FÁBRIS et al., 2009).

The main metabolic activities of adipose tissue are subdivided into lipogenic and lipolytic activities. The first involved is in all metabolic processes and is the result of the biosynthesis, incorporation and storage of triacylglycerol (TAG) in intracytoplasmic fats and the second involved refers to the actions that result in the hydrolysis of stored TAG, resulting in the release of fatty acids and glycerol. (FONSECA-ALANIZ et al., 2006).

Lipogenesis includes metabolic processes from biosynthesis to the accumulation of GAD in adipocytes. The triacylglycerol synthesis pathway requires glycerol-3-phosphate and FFA (free fatty acids) from chylomicron and lipoprotein hydrolysis (VLDL). This happens through the enzyme lipoprotein lipase (LPL), secreted through adipocytes, which has the purpose of hydrolyzing the TAG that are part of lipoproteins, thus releasing free fatty acids that are taken to the cell cytoplasm (FONSECA-ALANIZ et al., 2006).

Due to facilitated diffusion, FFA capture occurs by the adipocyte membrane due to the presence of carboxyl. Adipocytes use proteins that facilitate the transport of FFA to another protein, such as CD36 (platelet glycoprotein 4), found in most biological membranes, and act as an acceptor for various types of molecules that have the purpose of interacting with uptake. Thus, CD36 transfers FFA to FATP (free fatty acid transporter protein), which, like CD36, are integral membrane proteins that act as aids for intracellular diffusion (FONSECA-ALANIZ et al., 2006).

In the cytosol, FFA associates with another FABP-binding protein, which carries the product, asylum with coenzyme A (CoA). In addition, acyl-CoA carboxylase is an enzyme that catalyzes citrate into acyl-CoA in the inner mitochondrial membrane of adipocytes and, in combination with oxaloacetate, forms the citrate that leaves the mitochondria, which is

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transported by another protein, which transports it to the esterification site with glycerol-3-phosphate (FONSECA-ALANIZ et al., 2006).

For Fonseca-Alaniz et al. (2006), the production of glycerol-3-phosphate requires glucose uptake, in this case specific transport proteins, GLUT (GLUT1 and GLUT4), are involved, and this entire process is driven by insulin. During the prandial stage, insulin is secreted, and stimulates the translocation of GLUT4 to the cell membrane, increasing glucose transport, thus completing the synthesis of TAG transferred to small portions of fats.

Lipolysis, the process of fat catabolism, is an event controlled by hormones (catecholamines, glucagon, thyrotropin, parathyroid hormone, melanocyte-stimulating hormone, and adrenocorticotropin), as well as cytokines and adipokine (ZECHNER et al., 2011).

The sympathetic and parasympathetic nervous systems contribute by acting on the metabolism of adipose tissue. Sympathetic activation stimulates lipolysis and is controlled by β-adrenergic receptors, which induce hormone-sensitive (HLS) lipase activity. And parasympathetic activation has anabolic effects, such as the absorption of glucose and fatty acids in combination with insulin (FONSECA-ALANIZ et al., 2006).

Activation of the LHS enzyme occurs through the phosphorylation of serine by the protein Cynase A (PKA). This process happens when an individual has been fasting for a long time. On lipolysis activation, intracellular cyclic AMP levels increase, and PKA activation soon after. The formed FFAs bind to FABP (fatty acid transport protein) and are transported to the extracellular environment by FATP (fatty acid binding protein). In addition, glycerol is transported out of the cell via proteins of the aquaglyceroporin family, which are transmembrane protein channels (FERREIRA; READ; SILVA, 2016).

Fatty acids are released as end products, some of which are metabolized or pass through cell membranes and reach the bloodstream, bind to serum albumin, and are transported to cells for metabolism. However, plasma-soluble glycerol is taken up and reused by the liver (FONSECA-ALANIZ et al., 2006).

Adipocytes contain β-adrenergic receptors (agonists) responsible for lipolysis and α2-adrenergic receptors (antagonists) associated, respectively, with stimulatory and inhibitory G proteins responsible for lipogenesis. In each body region there are different numbers of receptors that are present in adipocytes, for example, α2 receptors are found in greater numbers in the fat cells of the buttocks and thighs and it is because of this that

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there are difficulties in reducing the receptors in this area, since lipolysis is inhibited. However, there are β-receptors in the abdominal cavity and this helps in the lipolysis of these fat cells in this region (RIBEIRO, 2011).

Aesthetic lipolysis treatments can be invasive or non-invasive. Non-invasive treatments are those that do not involve needles, surgery, or devices that physically enter the body, such as ultrasound and radiofrequency. Invasive methods are those that require perforation, such as intradermotherapy using injection in combination with the active ingredient lipolytic to achieve localized fat reduction through lipolysis (SILVA; DELFINO, 2018).

Local fat is manifested by the uneven development of subcutaneous connective tissue. In this case, the fat cells appear elevated in certain areas, with an irregular and wavy appearance. Local fat is a major problem for those who are concerned about their physical condition, as the irregular development of adipose tissue can be hereditary, postural or cyclical, and affects a large part of the population (BORGES, 2013).

Brazilians, especially women, quickly became the population that most often underwent surgical interventions aimed at aesthetics (SOUTO, 2006). Liposuction is the most common operation, followed by interventions in the abdomen, eyelids, breasts and nose (GOLDENBERG, 2005). Therefore, in the phenomenon of the search for beauty, the increase in aesthetic plastic surgeries is considered a great highlight in body changes.

Fat is grouped together, also called localized, it is a pathology built in fat tissue, where inputs accumulate in some places, the most affected being the abdomen:

> [...] It occurs due to the irregular development of adipose connective tissue and can be of genetic, postural, or circulatory origin. Adipocytes are enlarged with a higher amount of triglycerides than other regions; Local metabolism may be slow, but without major disorders. Adipose tissue is loose connective tissue, when enlarged, it presents irregularity and a wavy appearance, confusing it with cellulite (FEG), according to the location of the fat (ARAÚJO, p. 02, 2015).

It is pointed out that the regions with the highest concentration are the thighs and abdomen; and that even in the face of a balanced diet and physical exercise, it may not be fully mobilized, causing them to remain in place and bother the individual, requiring specific treatment to remove it.

The process of body fat production occurs due to an increase in the number of fat cells, an increase in the volume of existing cells and cellular hypertrophy and also by the association of these two phenomena, that is, localized fat is composed of changes in fat

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cells, characterized by an abnormal metabolism of fat or abnormal growth of it in the subcutaneous tissue, which mainly affects the abdomen. In addition, it is notorious that the human body has a limited capacity to store carbohydrates and proteins (RIBEIRO, 2011).

The fat contained in adipocytes represents the calorie deposit that is beyond its range of use (BORGES, 2013). Therefore, adipose tissue is a kind of energy storage, especially during long-term fasting, in addition to being able to prevent cold or strenuous physical activity.

In this way, local fat has a number of functions in the body, however, it can become harmful and unpleasant from an aesthetic point of view when in excess. Furthermore, the most common causes of local fat are: lack of exercise, stress, genetics, smoking, hormonal changes such as estrogen, aldosterone, increased prolactin and insulin, premenstrual syndrome, use of contraceptives, dysmenorrhea, some septic and orthopedic changes (RIBEIRO, 2011).

DISCUSSION

Intradermotherapy is the method that can stimulate the tissue that will receive the drug through the action of the puncture and the action of the drug, it says that its advantage is to be able to avoid the use of systemic drugs. Since Pistor began to innovate with such intradermal therapy in 1976, the French Association of Mesotherapy was founded in 1964, making the technique spread throughout the world (CAMPOS, 2011).

Although there are mixtures on the market for each aesthetic disorder, it is recommended to develop a drug for each patient, taking into account the characteristics of the aesthetic disorder and the mechanism of action of each drug (SBBME, 2010). They can be divided into lipolytic, thermogenic, and vasodilator, which help in treatments aimed at aesthetics, such as localized fat, cellulite, stretch marks, flaccidity, and hair care (NAGORE et al., 2001). In addition to inducing and regulating fibroblast proliferation and tissue drainage, the combination of these lipolytic agents is based on the activation of lipolysis in adipocytes by inhibition of phosphodiesterase (ZECHNER, 2011).

Several substances are used in intradermal therapy for localized fat and sold by compounding laboratories. According to the Intradermotherapy manual - PINEDA (2017), the main drugs used are available in 2 or 10 ml vials in liquid or lyophilized form. In addition, some of the main active ingredients used for the treatment of localized fat are presented below, as well as their functions.

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Sodium Deoxycholate Liposomes is a substance responsible for chemical lipolysis because it is an ionic detergent (emulsifier) and has demonstrated potential as a minimally invasive treatment for local fat reduction (ROTUNDA, et al., 2009). Liposomes act as carriers for sodium deoxycholate. Because they have a great homology with adipocyte membranes, they are able to penetrate the cell, allowing the agent to perform its proliferative activity more efficiently and for a longer time, locating it directly (ROTUNDA, et al., 2009).

L-Carnitine is a biologically active form of carnitine found mainly in muscles and is widely used in supplements to accelerate fat burning, generate more muscle energy and improve physical performance (BORGES, 2013). It transports stored fat to the cells to be used as energy during the lipid oxidation that occurs during exercise. It has antioxidant action and improves glucose metabolism, which helps in the development of muscle mass (BORGES, 2013).

Caffeine is methylxanthine, which acts as lipolytic of fosfadiesterase and adipocytes that are sensitive to catecholamines, stimulating lipase to use body fat stores for energy. Strong lipotrophic and diuretic effect.It is classified as a thermogenic agent with a specific effect to maintain an accelerated metabolism and burn more calories during action (BORGES, 2013).

Buflomedil is a direct vasodilator as it inhibits phosphodiesterase, an enzyme whose blockade leads to the accumulation of cyclic AMP (adenosine 3,5-monophosphate) and biogenic vasodilator amines. It enables the restoration of microcirculation by opening precapillary sphincters, acting directly on them, thus increasing the size of the vessels by up to 18%. It blocks the migration of calcium to vascular smooth muscle, and in addition, it has no adrenergic blocking effect and does not alter hemodynamic constants (ROTUNDA, et al., 2009).

It acts directly at the level of the arterial wall, causing passive vasodilation of the artery with increasing diameter, thus increasing irrigation. This remedy is used with excellent results for lymphatic drainage or whenever an increase in blood flow in this area is desired. It is indicated in lipodystrophy procedures to improve or stimulate fat-related microcirculation and eutrophication, and is indicated in intradermal hair therapy to improve oxygen distribution to follicles (ROTUNDA, et al., 2009).

Silicon is a Methylsilantriol Monostearate (formerly TRISSILINOL, now known as Silicon), or commonly known as Trisilinol, is an organic silicon that has a remarkable ability

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to restructure connective tissue and its structures. Silicon is necessary for the formation of collagen in bones and connective tissues, thus maintaining the structure of the skin and epidermal appendages (UZEL, 2013). Research shows that it plays an important role in preventing cardiovascular disease by improving the flexibility and elasticity of the arteries. It is an immune system stimulant and an inhibitor of cell and tissue aging (UZEL, 2013).

Trisilinol has a predominant effect on obesity, but it also acts as a lipolytic, with a milder effect than the classic ones. It is an integral part of the constituent elements of connective tissue: collagen, elastin, proteoglycans and glycoproteins present in the extracellular matrix. It causes the proliferation and activity of fibroblasts, promotes the regeneration and reorganization of collagen and elastic fibers. In addition, it strongly regulates cell division and antioxidant mechanisms, neutralizes lipid peroxidation and non-enzymatic glycosylation, and acts as an antifibrotic agent (UZEL, 2013). Used in the treatment of cellulite, lipodystrophy, stretch marks, *lifting,* and for joint pain.

Benzopyrone, alsoknown as coumarin, is a plant-derived active ingredient that can also be synthesized, with a chemical structure similar to isoflavones, which are also the plant-derived chemical group that is important for vascularization (UZEL, 2013).

Benzopyrone has a strong lymphangiogenic effect, contributing to a significant reduction in edema of vascular origin and has several mechanisms of action that explain this action, such as, according to Uzel, (2013):

- Increased activity of lymphatic vessel collection pumps;
- Reduced capillary permeability when changing;
- Consolidation of lysosomal and plasma membranes;
- Attenuation of the action of inflammatory mediators;
- And the increased activity of macrophages, which reduce the content of high molecular weight proteins in the extracellular space, reduce osmotic pressure, and return fluid accumulation to the intracellular space.

It is indicated in the treatment of peripheral vascular insufficiency, lymphedema, varicose veins, phlebitis and as an adjunct in the treatment of cellulitis. It is used to prevent bruising in medications for capillary fragility or in patients who are easily injured (UZEL, 2013).

Pentoxifylline is a vasodilator active ingredient. It is a phosphodiesterase inhibitor, its blockade increases cAMP in adipocytes, causing lipolysis. Whenever obstruction of this

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enzyme occurs, the kinetic effects of the adenylcyclase hormone-responsive system are released and amplified. In addition, it is indicated in intradermal applications for the treatment of lipodystrophy and microcirculation disorders (GARCIA, 2013).

The term "hyaluronidase" is a combination of two enzymes (hyaluronoglucuronosidase and hyaluronatolyase) obtained from sperm and extracted from the testes of cattle. In addition, the action of these enzymes has temporary depolymerization activity. The molecular structure of hyaluronic acid, which is tissue associated with connective tissue, promotes a more mobile intracellular environment, facilitating the permeability and distribution of substances in the tissue space, allowing better removal of edema and toxins (GARCIA, 2013).

Gelidium Extract is obtained from the red algae Gelidium sp, trade name Rhodysterol®, and contains 1.5 active sterols. Lipolysis was tested in adipocyte cultures, at a concentration of 2.5% to 5%, in which it demonstrated effects comparable to those of caffeine; and by applying an ointment containing 5% extract for four weeks to the thigh area, 10 out of 16 participants experienced a decrease in fat tissue thickness from 0.2 millimeters to 1 centimeter (Briand, 2003).

The sterols in gelidium extract act as a signal to adipocyte receptors, stimulating lipolysis. It also stimulates fibroblasts, contributing to the reorganization of connective tissues, restoring elasticity and tone (RIBEIRO, 2011).

Methylxanthines induce lipolysis enzymes, increasing adenylate cyclase, cyclic AMP and inhibiting phosphodiesterase, in this case facilitating osmosis. Test-tube studies show that methylxanthines combined with silanol have a seven-fold increase in lipolysis capacity. In addition, methylxanthines stimulate lipolysis and reduce adipocyte size, increasing intracellular cyclic AMP and inhibiting phosphodiesterase (MEDEIROS, 2004).

Synephrine is structurally similar to adrenaline, it can bind to adrenergic receptors located on adipocytes and increase intracellular cyclic AMP, thereby initiating the breakdown of fat molecules into fatty acids. Considering that caffeine is the most well-known lipolysis, acting through the inhibition of phosphodiesterase, which is the enzyme responsible for the cleavage of cyclic AMP (cAMP) in adipocytes, the combination of these two principles increases the amount of cAMP and, therefore, the activity of lipolysis (TERRA et al., 2015).

Clinical studies show that it has the ability to speed up metabolism, promoting greater calorie expenditure and, therefore, the burning of stored fat. By binding to adipose

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tissue receptors, it activates metabolism and burns fat without affecting the cardiovascular system (LOIZZO et al., 2012).

In addition to these elements, we have methods that combined with intradermal therapy for the local elimination of fat are a good choice if they focus on the physiological bases of adipose tissue. It is important to note that this type of treatment is not intended for the treatment of obesity cases. In order to reduce adipose tissue, the aim is to reduce the number of fat cells in a given area (UZEL, 2013).

Intradermal therapy can also be combined with other procedures, such as ultrasound, lymphatic drainage, carboxytherapy, radiofrequency and a combination of medications (AGNE, 2013). In addition, exercise combined with a healthy diet has also been shown to be a mechanism for fat loss and excess weight (BORGES, 2013).

Carboxytherapy acts directly on localized fat, as it contributes to the destruction of adipocyte membranes and alters the dissociation curve from hemoglobin to oxygen, thus inducing lipolytic oxidative action. This lipid oxidation action acts on causality, facilitating biochemical changes in the interstitium, venulocapillary ecstasy with hypoxia and, as a consequence, adipocytic suffering, leading to lipogenesis (GARCIA, 2013).

Radiofrequency is a non-invasive treatment that leads to better nutrition and blood circulation, hydration of tissues, increased oxygenation, accelerated elimination of catabolism, lipolysis, reduction of connective tissues. It promotes the reorientation of collagen fibers and increases their number, increases the thickness and density of epithelial tissue (GARCIA, 2013).

Ultrasonic device generates high frequency alternating current. The most commonly used frequency is 1 or 3 MHz. The use of this device in aesthetic and clinical procedures is often associated with the treatment of localized fat due to its mechanical and thermal effects (UZEL, 2013).

It should be noted that the main absolute contraindications are: allergy to any of the preparations in the mixture (mixture), infection in the treatment area, uncontrolled systemic disease, respiratory and allergic conditions (asthma, bronchitis) and pregnancy. Relative contraindications: use of drugs that alter blood coagulation, systemic disease that excludes the use of any component of the active ingredients (BORGES, 2013). There are also conditions that temporarily prevent the use of this method, such as systemic viral infections, feverish states and the use of antibiotics, situations in which they usually force the patient's treatment to be interrupted until the infection disappears (BORGES, 2013).

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CONCLUSION

The focus on a healthy body and, more importantly, beauty, spans different genders, age groups, and modern social class. Currently, there is a growing search for aesthetics and models in the areas of fashion, goods and services related to the ideal body. The standard of beauty is considered the thin body, without taking into account health issues. Therefore, it is notorious that body image is a mark for women, and the number of women on weight control diets is gradually increasing.

The standard of body beauty based on the thin body conveys the message of success, control, acceptance and happiness. Therefore, many subjects believe that with a toned and slim body,they can achieve all goals, since they consider weight loss as a solution to many problems. However, this standard, implemented as an ideal standard, does not take into account the various biotypes that exist today and encourages people to feel ugly about themselves. For this reason, many resort to diets, medication intake, laxatives, long-term fasting, excessive physical exercise, and other methods, such as technological procedures.

Modern lifestyles show that more and more people need to find a way to maintain the aesthetic standards that are required by a culture. In this culture, the body is dominated by symbolic functional processes, and the hegemonic sector controls the market, which determines and decides how to accept it. The growing interest in appearance makes beauty treatments even more important in the modern world.

The diversity of therapies and their availability to more than different sectors of society make this market very promising, which leads professionals in the field to engage more and more in studies on state-of-the-art aesthetic devices, increasingly improving their intellectual development.

Subcutaneous injections are recommended as an alternative for body shaping, slimming and skin rejuvenation. Increasingly, subcutaneous injections are used in the cosmetics market. Local fat is a condition that does not depend on gender, ethnicity or social class, but that generally bothers everyone. Intradermotherapy, cosmetics, ultrasound and radiofrequency are therapies aimed at localized fat. Thus, the effectiveness of Intradermotherapy is evident, and many studies and scientific publications about this method to minimize possible side effects (redness on reissue applied, burning, among others.

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