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***Abstract*—**The goal of this work is to report the main dermatological alterations occurring during pregnancy and actual cosmetic protocols available and recommended for safe use. Throughout pregnancy, woman's body undergoes many transformations such as hormonal changes and weight gain. These alterations can result in undesirable skin aspects that end up affecting the future mother's life. The main complaints of pregnant women involve melasma advent, varicose veins, edema, and natural skin aging. Even if most of the time is recommended to wait for the birth to use cosmetics, there are some alternatives to prevent and to treat these alterations during pregnancy. For all these cases, there is a need to update information about safety and efficacy of new actives and technologies in cosmetic products. The purpose of this study was to conduct a literature review about the main skin alterations during pregnancy and actual recommended treatments, according to the current legislation.

***Keywords*—**Pregnancy, cosmetic, treatment, physiological changes.

I. Introduction

COSMETICS are defined as preparations made from natural or synthetic substances for external use: skin, hair, nails, lips, teeth and mucous membranes of the oral cavity and external genital organs; in order to clean, to perfume and to protect, keeping their physiological and microbiological characteristics and/or altering its appearance [1].

In addition to the issues associated with premature aging and overweight, the main concerns during pregnancy leads women to search for safe available treatments, especially for skin and hair care, to maintain their appearance and well-being [2].

During pregnancy, cutaneous alterations are caused by hormonal increase, such as estrogen, progesterone, prolactin, β-HCG, as well as due to changes in the metabolism of proteins, lipids and carbohydrates, and change in immune response. Consequently, to these physiological alterations, skin abnormalities may occur, as pigmentation disorders (lentigines and melasma) vascular disorders (varicose veins and edema) and metabolic disorders (acne) [2].

Weight gain on an average of 22 pounds can be considered a habitual change, resulting from the increase of fat and bodily fluids, hormonal changes and other obvious causes, such as the presence of the fetus and embryonic attachments. In response to the weight gain, some changes occur in maternal metabolism. It requires more energy to supply the physiological needs of the growing fetus like faster liver metabolism, intermediate fast pumping of blood by the heart, digestion and accelerated assimilation of food, in addition to increased respiratory rate [3]. Besides these alterations, gestational hormones are responsible for an increase of one liter of blood. Some of the blood is needed to fill the breasts and placenta and the remainder generates an increase in cardiac output by approximately 30%. In this condition, swelling in the legs raises a common complaint among pregnant women, as well as some common dermatological changes during this period [3].

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II. Literature Review

There are three groups of dermatological problems considered usual in pregnancy. The first one is the exacerbation of skin diseases such as atopic dermatitis, lupus erythematosus, leprosy, pemphigus and psoriasis. In the second group are the specific dermatoses that appear during the gestational period, known as gestational pemphigoid, pruritus of pregnancy, pruritic folliculitis of pregnancy and polymorphic eruption of pregnancy. These diseases can generate risks to the mother and the fetus according to their length, depth of injury, risk of infection and treatment. In the third group, are those considered physiological skin changes as the appearance of stretch marks (alterations in connective tissue), skin pigmentation, vascular, hair and nails modifications, besides acne appearance [4].

According to an exploratory descriptive study of Urasaki, 91.1% of pregnant women related abnormalities in the skin during gestational period and 67.2% related that skin changes affect their self-esteem and wellness. Pigment spots are the major occurrences, followed by vascular changes, stretch marks and acne [4].

There is a concern about safety of cosmetic treatments when they are focused on pregnant women. Considering this, the US FDA (Food and Drug Administration) established five letter risk categories - A, B, C, D or X - to indicate the potential of a drug to cause birth defects if used during pregnancy. The A, B, C, D and X risk categories, in use since 1979, was replaced in 2015 with narrative sections and subsections to include: Pregnancy (Pregnancy Exposure Registry, Risk Summary, Clinical Considerations, Data) Lactation (Risk Summary, Clinical Considerations, Data) and Females and Males of Reproductive Potential (Pregnancy Testing, Contraception, Infertility). Despite this update, the old classification still remains usual in the literature [1]. Examples of non-recommended ingredients during gestational period are mentioned above: essential oils, dichloroethane and dichloroethylenes, xanthines, retinoic acid and its salts (category C), hydroquinone (category C), benzoyl peroxide

(category C), Aluminum chloride hexahydrate (category C), and large amounts of dyes and some fragrances [1].

TABLE I
FDA PREGNANCY CATEGORIES OF RISK

Category	Description
A	Adequate and well-controlled studies have failed to demonstrate a risk to the fetus in the first trimester of pregnancy (and there is no evidence of risk in later trimesters).
B	Animal reproduction studies have failed to demonstrate a risk to the fetus and there are no adequate and well-controlled studies in pregnant women.
C	Animal reproduction studies have shown an adverse effect on the fetus and there are no adequate and well-controlled studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.
D	There is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience or studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.
X	Studies in animals or humans have demonstrated fetal abnormalities and/or there is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience, and the risks involved in use of the drug in pregnant women clearly outweigh potential benefits.
N	FDA has not yet classified the drug into a specified pregnancy category.

A. Cosmetic Treatments for Stretch Marks

Stretch marks (*striae gravidarum)* are caused by the rupture of collagen and elastin fibers in the dermis occurring mainly in the hips, breasts, buttocks and abdomen regions during pregnancy. They affect approximately 70% of pregnant women between the sixth and seventh month of pregnancy.

Available treatments for stretch marks include aesthetic procedures like laser protocols and carboxytherapy, besides cosmetic use like ultra moisturizing and nutritive creams containing actives which promotes collagen synthesis and epithelial restoration.

Moisturizers like emollients and humectants are used in order to treat or minimize the injuries caused by tearing of the dermis. Alpha-hydroxy acids, ammonium lactate, siliceous organic, lipids, phospholipids, cholesterol, fatty acid, propylene glycol, glycerin and sorbitol can be cited as ingredients for safe use during pregnancy [5].

Vitamin E plays an important role as antioxidant and emollient agent due to its ability to prevent not only biological molecules oxidation but also the transepidermal water loss. For this reason, it is used in the treatment of rupture of collagen and elastin fibers caused by dehydration or excess of stretching [6].

Cosmeceutical ingredients may be included in the auxiliary treatment of stretch marks, such as hyaluronic acid, panthenol, allantoin, elastin and collagen. The hyaluronic acid is considered safe for use during pregnancy, due its abundant presence in fetus tissue. It is a polysaccharide of glycosaminoglycans located in connective tissues of mammals and intracellular spaces. Its main function is to keep water binding in the epithelial and cartilage tissues, which maintain flexibility and elasticity. Its use is freely recommended during pregnancy period, but for assure permeation into dermis it may be considered a low molecular weight state of hyaluronic acid, obtained by fragments of the polymer and/or nanotechnology process [7]. Likewise, panthenol (pantothenol) is considered a safe option as constituent of the skin [2].

At the end of pregnancy, it is usual that stretch marks be more reduced, its appearance improves and the color becomes pinkish white. After birth, some authors indicate the topical tretinoin 0.1%, nighttime use, for the treatment of the remaining scars, because it stimulates mitosis and cell renewal of the epidermis and may be related to dermal collagen synthesis. However, FDA agency classifies tretinoin as a risk C substance, which means to be contraindicated for use in pregnant and/or lactating women because of the risk to cause problems for the fetus and the newborn child during breastfeeding [2], [8], [9].

B. Cosmetic Treatments for Pigmentation Disorders

Pigmentary skin disorders are very usual during pregnancy, affecting almost 90% of women in this condition, being even more frequent in those who have darker skin [10].

The most frequent manifestation is melasma, and can be prevented by using sunscreens and avoiding excess of sun exposure [11].

One of the most suitable sunscreens is the physical filter type, also known as inorganic, because they are not absorbed through the skin and they have low skin-irritation potential. They have been used in sensitive skin, children and pregnant women. Their mechanism of action occurs through the formation of a layer that reflects and scatters ultraviolet radiation, not allowing it to be absorbed. The most common molecules account for this blocking action of physical filters are titanium dioxide and zinc oxide; they are semiconductor materials that protect the skin according to the size of its particles suspended in formulation, being the ideal size proportional to the order of radiation [12].

The other category of sunscreens that can also be used, but with greater caution because of the risk of dermal absorption, is the organic UV filters. They are made up of ortho/para-substituted aromatic molecules that absorb high energy ultraviolet radiation and turn it into a lower-energy radiation, harmless to human skin, allowing the excess energy be released into the form of heat [13].

The minimum sun protection factor (SPF) recommended for pregnant women is 15, values higher than 30 represent unnecessary exposure to increase amounts of organic filters. The effectiveness of sunscreens is related to the application time before sun exposure. Ideally, it should be used half an hour before sun exposure and reapplied each two hours or whenever necessary [11], [14].

When hyperpigmented areas are observed on the skin of pregnant women, even though proper care is taken, it is recommended to wait until childbirth to treat these pigmentary stains. During pregnancy, corrective makeup cosmetics seem to be an appropriate procedure to camouflage stains in order to offer a safe and convenient protocol for the psychological welfare of women in this condition [15].

For the treatment of hyperpigmentation, lightening agents are topically used, and these cosmetics may act by different inhibitory mechanisms: inhibition of melanocyte-stimulating hormone (α-MSH), of tyrosinase activity and of melanin transference by melanocytes. It is usual to prescribe hydroquinone as skin bleaching, because it reduces the melanin synthesis, but professionals must be cautious to recommend it to pregnant women. The FDA classifies hydroquinone as Group C of risk, and it is advised to lower doses or equal to 300 mg/kg [8].

Another substance used for skin lightening purposes is kojic acid, which is produced by Aspergillus fungi. Kojic acid suppresses melanogenesis by copper ion chelation. This ion plays a cofactor role in the tyrosinase activity. It is generally used in emulsion (1-3%) associated with glycolic acid [16].

Azelaic acid can also be used to reduce hyperpigmentation spots, and it does not act in regular melanocytes, which prevents the occurrence of leukoderma (white spots) and ochronosis (blue-black hyperpigmentation). According to FDA, azelaic acid belongs to the Group B of risk, and can be used by pregnant women, and also during lactation [8].

There is also another class of substances used for the cosmetic bleaching treatment, represented by retinoids. Its mechanism of action involves the dispensing of beads of pigmentation of keratinocytes and increased cell turnover, thus decreasing the hyperpigmentation of the skin. Oral retinoid use is not recommended during pregnancy because of teratogenicity. Although some studies have shown no teratogenic action of topical retinoids, they are still not recommended during pregnancy (category C by FDA) [10].

There are also alpha-hydroxy acids (AHA) to improve the treatment of skin pigmentation. At low concentrations they reduce the cohesion of the corneal extract corneocytes, and stimulate the proliferation of cells in the epidermis. It is safe for use by pregnant women at a concentration of 10%, in the form of lotions, creams, gels, and solutions [17].

Natural products have been associated with different action mechanisms. A common association is between chamomile, phytic acid and arbutin. Chamomile acts by inhibiting the endothelins, while phytic acid and arbutin by tyrosinase inhibition. In addition, the phytic acid also has chelating action of copper, which further increases their whitening efficiency [18], [19]. These compounds demonstrate better stability when compared to hydroquinone, lower toxicity, have no unpleasant odor and are safe to use during pregnancy [20].

C. Cosmetic Treatments for Pregnancy Acne

Increase in progesterone levels during pregnancy stimulates sebum secretion that, associated to hyperkeratosis and cellular debris accumulation, promotes microbial proliferation and an inflammatory process culminating in the appearance of *acne vulgaris* lesions [21].

Oral medication treatments for acne are not indicated during pregnancy. Antimicrobial soaps and scrubs are used quite often, but these are not very beneficial and exfoliating can reduce adherence to treatment through their abrasive power and ability to cause skin irritation [21].

Cosmetic formulations based on azelaic acid exhibit activity against *Propionibacterium acnes*, and they are indicated for the treatment of initial stages of acne [8].

Nicotinamide is the active form of nicotinic acid (vitamin B3) and its topical use may be an alternative treatment of mild to moderate acne in pregnant women. It has anti-inflammatory potential and it has comparable efficacy to topical antibiotics [21].

Alpha hydroxy acids (AHA) are suitable for non-inflammatory lesions, acting to reduce follicular plugging. It is recommended applying a thin layer in the affected area, but exacerbation of lesions can occur during the treatment depending on the sensitivity of the skin and frequency of use [22].

It is important to note that patients who undergo treatment with AHA may suffer photosensitivity, requiring the application of sunscreens. They also may experience erythema, flaking and sensitivity, which are common adverse reactions of this class of substance [21].

More severe cases of acne during pregnancy implicate in efficacy-safety evaluation. If necessary, erythromycin can be considered because of its relative safety. It exceeds the placental barrier in low concentrations, and it is the first-line antibiotic therapy in this situation. Other advantages of erythromycin systemic treatment are the possibility of concomitant intake of food, decreased occurrence of vaginal candidiasis, and the absence of photosensitivity during the course of treatment [21].

Alternatively, penicillins and cephalosporins are classified in category B of risk, due to lack of documented abnormalities caused by these drugs. Other classes of antibiotic, like aminoglycosides, tetracycline, antimycotics and vancomycins, should not be used during pregnancy because they are not considered safe by regulatory agencies [8].

D. Cosmetic Treatments for Hair and Nail Changes

During pregnancy changes occur in the woman's body and many of them are related to hypervolemia. It causes a non-injurious dilution in maternal blood, but it can lead to anemia mainly during the second trimester. This anemia is responsible for the weakening of nails and hair of pregnant woman [23].

Additionally, there are a significant number of women of reproductive age, which present low iron stocks and low hemoglobin count, contributing to the onset of anemia [24].

Transformations that occur during pregnancy require a great amount of vitamins, proteins, and minerals for maintenance of the mother’s body and the fetus. In most cases, nail and/or hair changes are caused due to some lack of these compounds, requiring medical follow-up [25].

Hair growth involves three main phases and it is not characterized by continuity. The first phase is marked by growth (anangen phase) and may last from three to seven years. It suffers interindividual variations according to gender, age, genetics, diet and other factors. The second phase follows the first one, in which the follicles come into involution and cessation (catagen phase) lasting about four weeks. The cycle

ends when the follicles enter a phase of rest (telogen phase), marked by hair loss and returning to the anagen phase [26].

In pregnancy, when there is no anemia, an increase of follicles in the anagen phase occurs due to the influence of hormonal changes. For this reason, healthy pregnant women feel they have stronger more voluminous hair than before. After delivery, abrupt changes occurs in hormone levels which promotes the evolution of the anagen phase to the telogen phase, causing what is known as telogen effluvium, a diffuse hair shedding. Under regular conditions, hair density returns in three months [26].

Hair growth stimulating shampoos and lotions are treatments widely employed. Spironolactone mechanism for alopecia treatment is not well elucidated, but it is known that it has antiandrogenic action inhibiting testosterone production and competing with dihydrotestosterone in androgenic receptors. For this reason, it is more indicated for alopecia caused by the androgen hormone. Its use for pregnant women is not recommended, because it can induce feminization of the male fetus [27].

Minoxidil topical solution is used in concentrations of 1% and 5%. It has been verified that this concentration range is well tolerated by patients and it has minimal systemic absorption, not bringing severe risks to health. The mechanism of action takes place through its vasodilation property, which increases the blood flow in hair follicles, favoring the growth of hair. However, minoxidil topical should not be administered during pregnancy because reduced conception rates and an increased incidence of fetal absorption have been observed in rabbits [28].

Among other therapeutic options is the use of progesterone in topical solutions. It has similar structure to testosterone and is a competitive inhibitor for the 5 alpha-reduction of testosterone (an anti-androgen applied in alopecia). Its use can be considered since with medical follow-up, avoiding its application in weeks closer to childbirth [25].

In addition to the changes that can occur, some women feel the need to continue the cosmetic treatments such as hair coloring during this period. The Organization of Teratology Information Services (OTIS) affirms that there are no reports of hair dye causing damage in human pregnancies, and that very small amount of the chemicals in hair dye is actually absorbed into the body. OTIS recommends waiting to use hair dyes until the second trimester [29].

Nails grow at a fast rate during pregnancy, and may become brittle, soft, and dystrophy, with the appearance of transverse grooves. The causes are not yet well known, but it is recognized that these changes are reversible. The most widely used nail cosmetics for all women, including pregnant women, are nail polishes. The ideal at this stage is to replace acetone for hypoallergenic removers [30].

E. Anti-Aging Therapy during Pregnancy

Skin aging is associated with the loss of fibrous tissue, decreasing cell renewal and reduction of the vascular and glandular network. These factors are responsible for intrinsic aging, while the extrinsic aging is the result of the photoaging caused by the incidence of UV radiation [31].

The most wanted aesthetic facial treatment is the anti-aging treatment. The aging process has genetic causes, hormonal, and environmental factors (UV radiation, smoking habits and alcohol intake).

Many anti-aging cosmetics are produced with antioxidants such as vitamin C, vitamin E, lipoic acid and ubiquinone, in order to reduce the oxidative stress of cells, neutralizing oxygen reactive species, and restoring the balance [32].

Vitamin C (ascorbic acid) is an antioxidant molecule that acts for both peroxide and hydroxyl free radicals, besides acting in the control of oxidative stress as an inhibitor of metalloproteinase-1. Additionally, vitamin C promotes collagen synthesis and has a lightening power due to prevention of oxidation during the melanin synthesis process [33], [34].

Another antioxidant option is vitamin E, also known as tocopherol. An advantage of its use is for the prevention of the appearance of age marks, and is safe for use during the gestational period. This substance has four isomers, of which, the major activity is the isomer ϒ; however, it is unstable and does not allow application in cosmetic formulations. Thus, the molecule used in formulations is the alpha-tocopherol with the inconvenience of being photosensitive. Its action takes place via the phospholipid link chain with the cell membrane, leaving one side in contact with the water and the other with the lipids; that way, the alpha-tocopherol capture free radicals and rust, forming the alpha-tocopheroxyl, acting directly on the inhibition of lipid peroxidation [34].

When formed, the radical alfa-tocopheroxyl can return to the active form after reacting with ubiquinol. The result of this reaction is vitamin E with the return of its antioxidant power and the formation of ubiquinone. Ubiquinone has endogenous synthesis, present in lipid in cell membranes, and it has an antioxidant action and low molecular weight. When in the presence of free radicals, ubiquinone stops the chain reaction of free radicals. As it has endogenous origin, it does not bring health risks to the fetus and to the pregnant woman if applied in cosmetics [34], [35].

A third very common anti-aging active is lipoic acid. It is an antioxidant that can be considered a superficial chemical renewal. Its major activity occurs when in association with ascorbic acid, protecting the biological membranes against oxidation. It is believed that it has a great performance in fibroblasts, reducing skin aging and also the damage on actin [36].

The topical use of lipoic acid is effective when it is at concentrations between 0.5% and 5%. It is safe for pregnant women, since its use has presented no toxic events to the human body [37].

In addition to the traditional antioxidants, are ferulic acid and resveratrol. Ferulic acid is a derived plant compound found in flaxseed and other sources, such as corn and rice bran. It has high antioxidant effect, working as a cell membrane and hindering the action of free radicals, with the benefit of preventing the formation of erythema caused by

UVB radiation. When associated with vitamin C, protective potential increases becoming a barrier also to UV radiation.

Resveratrol, as well as ferulic acid, is a phenolic compound found in many plant species including grapes. It has an antioxidant activity related to cytoprotection of plant and animal cells [38]. Resveratrol naturally occurs in Z and E isoforms, the second one is the most active and easily converted to form Z through photodegradation. Because it is a phenolic compound, its action occurs through the hydrogen molecule, which acts on free radicals. Resveratrol is considered safe for pregnant women in cosmetic formulations, but its use by oral administration can cause problems for the fetus [39].

F. Cosmetic Treatments for Vascular Changes

Edema is the accumulation of fluid in the intercellular spaces that hinders the capillary permeability affecting mainly the lower limbs. Some of the causal factors are hormonal changes, increased capillary permeability, increased capillary pressure, hypoproteinemia, and compression of the venous valves. In this phase, the heavy uterus presses pelvic and abdominal veins, causing a swelling that can be redistributed when the woman is in the reclining position [37].

In addition to edema, there are often other problems related to movement accompanying pregnant women, such as the emergence or worsening of preexisting varicose veins. There are some risk factors for the development of varicose veins in pregnancy such as age, family background, number of pregnancies, weight gain, peripheral vasodilation induced by hormones and compression of the uterus. This is a problem of high prevalence among pregnant women, coming to be present in around 70% of pregnant women, most in the second trimester of gestation [40].

There are preventive measures that reduce the appearance or worsening of this swelling, as the use of compressive elastic stockings, proper diet and rest with elevation of the legs by a proper period. When there is no reduction of the edema in treatment, manual lymphatic drainage is indicated because it improves symptoms like pain and tingling, and reduces the swelling without major risks for the patient. However, the use of diuretics during this period or lymphatic drainage performed with equipment is not recommended [41].

Cosmetics used for edema relief are relaxing gels and creams that contain arnica, hamamelis and horse chestnut. All these substances have natural origins, but some of them may offer serious risks to pregnant woman. Oral administration of arnica, for example, may result in abortion due to uterine contraction stimulation. When applied in the skin, arnica has anti-inflammatory, healing and analgesic properties, in addition to activating the circulation. Topical formulations offer lower risk compared to the oral route of administration, nevertheless pregnant women may avoid its application [42], [43].

Witch-hazel is a shrub that blooms in the autumn and has many therapeutic properties. Among them, we can highlight their hemostatic function, anti-inflammatory and vasoconstriction properties [44].

Another ingredient used in topical preparations for edema is horse chestnut. It contains aescin, which is a mixture of triterpenoid saponins, responsible for its anti-inflammatory activity in reducing edema. Its use is quite safe for all population groups, including pregnant women, and the application of horse chestnut for edema is justified [45], [46].

Cosmetic products with camphor and menthol above 3%, often found in moisturizers for pain relief, are not recommend for pregnant women because they cross the placental barrier, and have embryotoxic and abortifacient effects [44]-[46].

Another aesthetic problem experienced by women, not just those during the gestational period, is cellulite. Cellulite is by definition an edematous connective tissue infiltration, with polymerization of amorphous ground substance, which produces a fibrotic reaction manifested through nodules of different sizes. It is caused by lipid accumulation on adipocytes, which ends up retaining the greatest amount of lipids and fluids, resulting in a worsening of local circulation associated with the breakdown of collagen and elastin fibers [47].

Topical cosmetics associated with lymphatic drainage massages have broad action with performance in local skin restructuring and lipodystrophy aid in drainage. Among the major formulations it is possible to highlight those containing plant extracts and methylxanthines [26].

The plant extracts containing xanthines derivatives have a decongestant action contributing to drainage by improving the microcirculation. Regarding their use during the gestational period, there is no data to prove their safety to the fetus and to the mother, mainly considering that these actives are often vectorized by liposomes, which enhance their absorption through deeper layers of the skin [48].

The methylxanthines group includes caffeine, theobromine, theophylline, and aminophylline. By a combined mechanism of AmpC increasing and phosphodiesterase (PDE) inhibition, methylxanthines have a lipolytic action on the adipocytes, resulting in a transformation of excess lipids in free fatty acids removed through the lymphatic system of the body [49].

Caffeine is relatively safe since it does not exceed a concentration of 5% in cosmetic products. Other xanthines cannot exceed 4% of the formulation. Even so, its use is not recommended in pregnant women [49].

G. The Use of Insect Repellents during Gestational Period

Cosmetic repellents act by slow release outward from the skin of a chemical with repulsive odor to insects [50]. The use of insect repellents by pregnant women has become a public healthcare measure in tropical countries like Brazil, where the incidence of potentially fatal diseases by the *Aedes aegypti* mosquito (Zika, Dengue and Cikungunya virus) is alarming. The main concern is the Zika virus infection in pregnant women that causes microcephaly in newborns. In Brazil (2016), 802,429 cases of Dengue were reported followed by 91,387 cases of Zika and 39,017 cases of Chikungunya [51], [52].

For this reason, the use of repellents in cosmetic products has been strongly recommended by pregnant women in

tropical countries, mainly in the second and third trimesters of pregnancy. The use of repellents containing, n-diethyl-meta-Toluamide (DEET) 10% - 30% for pregnant women is considered safe (AI). However, it is not recommended for use in children under two years of age [52].

Other chemicals used as repellents include hydroxyethyl isobutyl piperidine carboxylate (Icaridin or Picaridin) 10% - 20% (AII), ethyl butylacetylaminopropionate (EBAAP or IR3535) and essential oils such as citronella, but there is no safety study of its use in pregnant women [50].

III. Conclusion

Cosmetic treatments can represent a better choice when compared to restricted drug options for the main complaints of pregnant women. However, some ingredients can represent a risk to the fetus and safety studies are being constantly updated. Some divergences of safety information arise from regulatory agencies from the USA, Europe and South America. This aspect reveals the need of further cosmetic harmonization.

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