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Trend of using herbal based preparations in pediatric skin inflammation disorders

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Abstract

Introduction: Skin inflammations that are more common and affect the pediatric age group more are rash, atopic dermatitis, fungal infections, psoriasis. The use of medicinal plants and herbal based preparations in the treatment of skin diseases, results from their impact on several stages of inflammation.

The aim of this study was to review the information about the effects and anti-inflammatory activity, of medicinal plants and their preparations related to the treatment of most frequent skin inflammations in the pediatric age group, and to assess the trend of use of herbal remedies for these inflammations from our population.

Methodology: For the realization of this descriptive and analytical study, multiple sources of information were used for the literature review, as well as through a random questionnaire conducted in a sample of 120 pharmacies in country. The data was collected from the pharmacists' responses and was analyzed specifically for the skin inflammations of pediatric age groups and the use of herbal preparations for the treatment of this disorders.

Results: From the literature review the most frequent skin inflammations in the pediatric age group identified were rash, atopic dermatitis, fungal infections, folliculitis, furuncle, carbuncles. During the last years, among the medicinal plants mostly used locally for skin treatment are *Matricaria Recutita*, *Calendula officinalis*, *Aloe Vera*, *Echinacea purpurea*, *Oenothera biennis*, etc. From the completed questionnaire, a significant part of pharmacists (45%), reported that the most common skin inflammations in pediatric age presented in pharmacy are atopic dermatitis, rash for 17% of them, and fungal infections (12%). Regarding the way of using these preparations, 57% of them reported that they are used locally as combined therapy with the conventional one. Pharmacists reported that herbal preparations mostly used locally are those with *Aloe Vera* (31%), 13% of them reported those with *Calendula officinalis* and 5% of them reported preparations with *Matricaria Recutita*. Meanwhile, 48% of them reported that combined preparations of these herbs were used. Pharmacists are mostly the ones who suggest the use of these herbal based preparations (48.31%). Also, 65% of them think that the use of herbal based preparations for the treatment of skin inflammations in the pediatric age group has increased in recent years.

Conclusions: Medicinal plants are rich with active ingredients and can be effective for the treatment of skin inflammations in the pediatric age group. As their use has increased in recent years, further research is needed regarding the efficacy, safety, optimal uses, and standardization of herbal preparations.

Keywords: Skin inflammations; Medicinal plants; Pediatric age; *Matricaria Recutita*; *Calendula officinalis*

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1. Introduction

Skin is the major organ of the human body and most assorted. One of its main functions is protection [1]. It protects the body from external factors such as bacteria, chemicals, and temperature [1]. The general condition of the skin is important for esthetic reasons and health reasons. Skin inflammations affect all ages from newborns to the elderly. They are more pronounced in the pediatric age group as the skin is more sensitive to external agents. Inflammation is activated by pathogens, harmful mechanical and chemical agents, and autoimmune responses, and is a complex process during which the body repairs tissue damage and protects itself from harmful stimuli and is characterized by symptoms such as redness, swelling, itching, heat, and pain [2]. For thousands of years, herbal therapies have been used to treat these inflammations. The effect of herbal preparations on different phases of the process of inflammation results in their use in the treatment of inflammatory skin diseases [2].

This article aims to provide a theoretical information of the most frequent skin inflammations in the pediatric age group, to analyze the anti-inflammatory activity, and the effects of medicinal herbs related to the treatment of these inflammations, and to reach conclusions on their proper use in the pediatric age group.

2. Materials and Methods

In this study multiple sources of information were used for the literature review, as well as through a random questionnaire conducted in a sample of 120 pharmacies in our country in the period of April- May 2021. The subjects in the study were pharmacist from the city of Tirana and Durres. The data was collected from the pharmacists' responses and was analyzed specifically for the skin inflammations of pediatric age groups and the use of herbal preparations for the treatment of this disorders.

3. Results and discussion

3.1. Skin Inflammation and medicinal plant used

Skin inflammation that are common in the pediatric age group, are: rushes, which sometimes can be associated with other symptoms such as fever, reduced immunity etc. [3]; atopic dermatitis, as a chronic skin disorder [1], fungal infection presented as group of skin cells in different part of the body, such as head (tinea capitis), between the fingers or diaper area [1,3]. Cause of skin disorders can also be the bacteria, causing infection in hair follicles, such as folliculitis, a sort of inflammation of the hair follicle; furuncle, an infection of the hair follicle associated with an abscess; carbuncle, a profunder group of infected hair follicles with pus. [3].

3.2. Medicinal Plants

During the last years, among the plants most used locally for their treatment, the following are mentioned:

- *Matricaria Recutita*, Family Asteraceae. It contains essential oil (α -bisabolol and camazulene) as well as flavone derivatives (apigenin, luteolin, apigenin-7-glucoside) [4]. Thanks to these components, the extract of chamomile flowers exhibits anti-inflammatory activity acting on different stages of inflammation [2,4]. It is used topically for skin inflammations and irritations, bacterial diseases, rashes, eczema, wounds (infected), abscesses, and insect bites [2]. It also has antioxidant, astringent, and healing properties [4]. It is found alone or combined with other herbs, in the content of many pharmaceutical products for children (shampoo, creams, ointments, etc.) [1,4]. and essential oils and extracts are used to develop medicines to treat skin diseases [5]. Data from some clinical studies have shown that formulation such as ointments and creams with extracts from chamomile flower are more effective than synthetic drugs (hydrocortisone) for the cure of dermatitis and the extracts also show ability to heal atopic dermatitis-like lesions in animal models [2, 6].
- *Calendula officinalis*, Family Asteraceae It contains saponins and triterpene alcohols and flavonoids (quercetin and isorhamnetin), which have anti-inflammatory effects in different stages of inflammation [4]. The flower extracts have shown effect on acute wound healing in vivo because of faster resolving of inflammation phase [7]. *Calendula* is used topically especially for skin afflictions [4]. As a medicinal plant it has a long traditional of pharmaceutical use. It is found alone or combined with other herbs in the content of creams, oils and ointments and is used for compresses to heal minor wounds, bruises, rashes, burns and dermatitis [2, 4, 8].
- *Aloe barbadensis* miller, Family Liliaceae Fresh *Aloe Vera* leaves contain carbohydrates, glycoproteins, sterols (lupeol, β -Sitosterol) and enzymes (bradykinase) [4]. The gel is prepared from fresh leaves and the above

ingredients have anti-inflammatory properties in acute dermatitis [3, 4]. It is used for the external treatment of small wounds and inflammatory skin disorders, minor skin irritations including burn up, injures, and scratches [2,4,9].

- *Echinacea purpurea*, Family Asteraceae. The fresh plant contains alkamides and caffeic acid derivatives, which exhibit anti-inflammatory activity that consists in inhibiting the synthesis of prostaglandin E2 (PGE2) [4,10]. It is used for the treatment of small superficial wounds and skin inflammation [2, 4, 10]. Anyway, allergic reactions are possible while using it [10].
- *Oenothera biennis*, Family Onagraceae Evening primrose oil contains triglycerides of fatty acids, mainly γ -linolenic and linoleic [4]. Some clinical studies show that its internal use treats and relieves the symptoms of atopic dermatitis as well, and the topical use of the oil for the treatment of atopic eczema regulates the function of the epidermal barrier [4,11]. It is combined with *Calendula officinalis* in pharmaceutical products for children. Usually in patients taking epileptogenic drugs should be used with caution [2].
- *Linum usitatissimum*, Family Linaceae They contain α -linolenic and linoleic acid of triglycerides and mucilaginous polysaccharides (galacturonic acid) [4]. It has anti-inflammatory and soothing properties [12]. It is used in local skin inflammations and as a warm compress [4].

3.3. Results from the survey

From the study conducted in 120 pharmacies of our country, the following results were collected and analyzed:

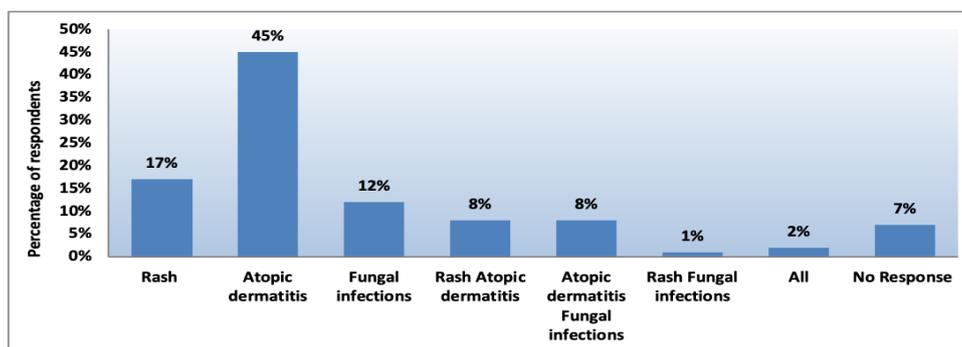


Figure 1 The most frequent skin inflammations encountered by pharmacists

In figure 1, it is clearly shown that the most frequent inflammations encountered by pharmacists in the patients presented in the pharmacies for the pediatric age group in our country is atopic dermatitis with 45%, followed by rash with 17% and fungal infections with 12%. With an equal percentage of 8% of the respondents, they think the most frequent combinations of inflammations such as rash with atopic dermatitis and atopic dermatitis with fungal infections. 7% of them do not have an answer while 2% think that all the above-mentioned inflammations are frequent. Only 1% of respondents think about rashes and fungal infections.

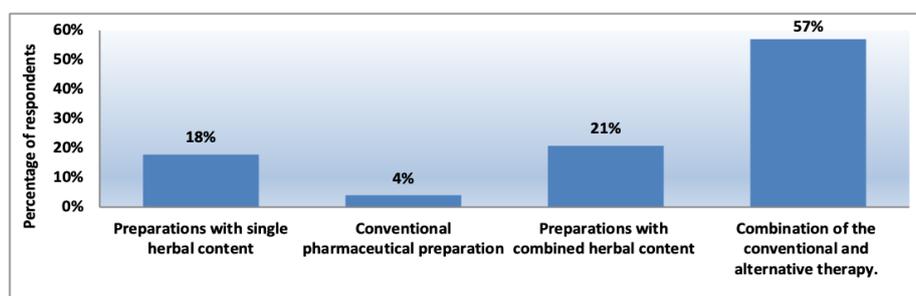


Figure 2 Preparations that are used the locally in the pharmacy for the treatment of skin infections in the pediatric age group

As shown in figure 2, many of the pharmacists, specifically 57% of them, declare that for the treatment of infections in the pediatric age group is used mostly locally the combination of the conventional and alternative therapy. Twenty-one percent of them respond that the preparations used are those with combined herbal content, while 18% of them think

that they are used as preparations with single herbal content. And only 4% of them declare that the patients used conventional pharmaceutical preparations.

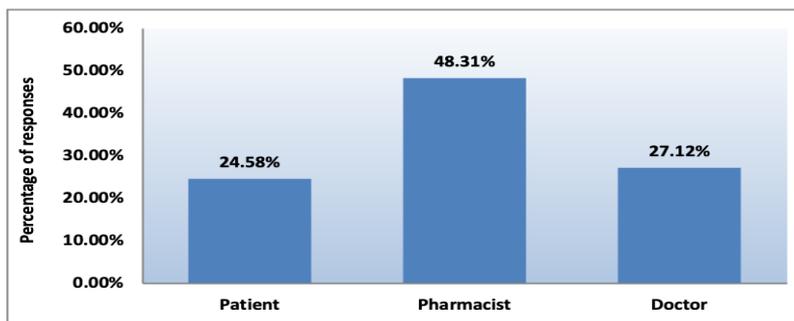


Figure 3 The choice to get herbal preparations at the pharmacy

From the percentages shown from figure 3, results that the choice to get herbal based preparations is made more by pharmacists' advice (48.31%). 27.12% of them declare that the patients get these preparations under Doctor's prescription, and the remaining (24.58%) declare that the patient decide themselves.

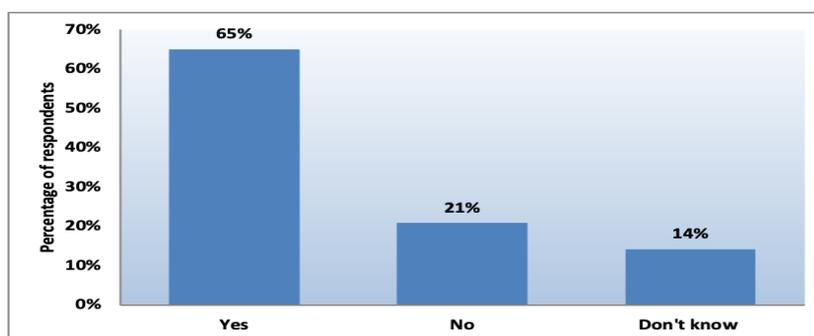


Figure 4 Statistics on the increase in the use of herbal preparations during the last years

Figure 4 shows that 65% of pharmacists declare that the use of herbal based preparations for the treatment of skin inflammations in the pediatric age group has increased in recent years, 21% of them think the opposite, while 14% are not aware.

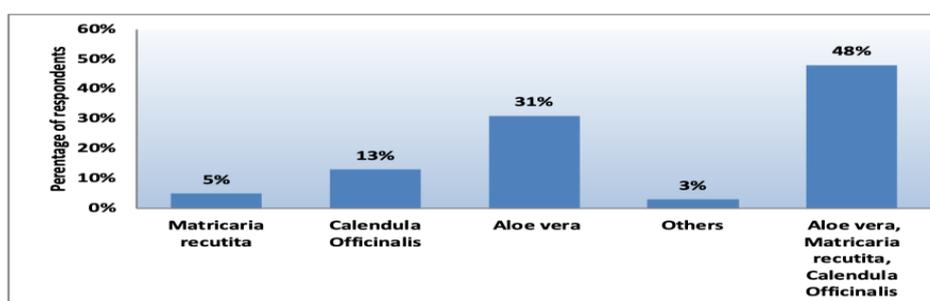


Figure 5 Herbs (in the content of herbal preparations) that are used more for the treatment of skin inflammations in the pediatric age group

In figure 5, 48% of pharmacists declare that the herbal- based preparation most used for the treatment of skin inflammations in the pediatric age group are those with the combination content of the *Aloe Vera*, *Matricaria Recutita* and *Calendula officinalis*. 31% of them think only *Aloe Vera*, 13% only *Calendula officinalis* and 5% only *Matricaria Recutita*.

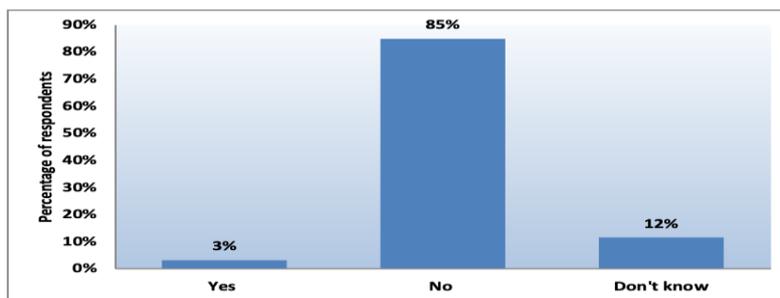


Figure 6 Results on side effects of herbal preparations

In figure 6, 85% of pharmacists state that they have not encountered any side effects reported from the use of herbal based preparations, while only 3% of them have encountered side effects from the patients use, who reported allergy as the most frequent side effect.

4. Conclusion

Skin inflammations are frequent health problems that affect all ages from newborns to the elderly, causing damage in different ways. From literature review on the most frequent skin inflammations in the pediatric age group, the following were identified: rash, atopic dermatitis, fungal infections, folliculitis, furuncle, carbuncles. During the last years, among the medicinal plant mainly used locally as part of pharmaceutical preparations for the treatment are mentioned: *Matricaria Recutita*, *Calendula officinalis*, *Aloe Vera*, *Echinacea purpurea*, *Oenothera biennis*, ect.

From the data collected from the completed questionnaire, a significant part of pharmacists reported (45%), that the cases presented to the pharmacy for skin inflammations in pediatric age are atopic dermatitis rash (17%) and fungal infections (12%). Pharmacists reported that the most locally used herbal preparations are those based on *Aloe Vera* (31%), 13% of them reported those with *Calendula officinalis* and 5% of them reported preparations with *Matricaria Recutita*. Meanwhile, 48% of them reported that combined preparations of these herbs were used. Regarding the way of using these preparations, 57% of them reported that they are used locally as combined therapy with the conventional one.

Pharmacists are mostly the ones who suggest the use of these herbal preparations (48.31%). Also, 65% of them think that over the last few years the use of herbal-based preparations for the treatment of skin inflammations in the pediatric age group has increased significantly. In general, pharmacists (85%) have not noticed any side effects from their use. In opposite cases, the most frequent side effect was allergy (3%).

Medicinal plants are a rich source of active ingredients and can be effective for treating skin inflammations in the pediatric age group. It is important to know what herbal preparations are available, how to use them, what possible side effects or interactions may occur to allow for more effective patient counseling.

As their use has increased in recent years, further research is needed regarding the effectiveness, safety, optimal uses, and standardization of herbal preparations.

Compliance with ethical standards

Acknowledgments

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Disclosure of conflict of interest

The authors declare that there is no conflict of interest for the presented study.

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