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Research Article

Honey and Cinnamon Combination for the Control of *Acne vulgaris*

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Abstract

Acne is a pleomorphic skin disorder of the skin that most often occurs in young people between the ages of 12 and 24, about 85 percent. There are different ways to treat acne including antibiotics, herbs and combination therapy. Staphylococcus epidermidis and Propioni bacterium acnes are the two main skin bacteria that cause acne. The goal of this study was to determine whether the ethanolic extracts of cinnamon bark and honey, alone or in combination, have antibacterial properties against bacteria that cause acne. Using disc diffusion, the antibacterial properties of cinnamon bark and honey extract were examined against *P. acnes* and *S. epidermidis*. The chronic skin condition known as *acne vulgaris* is characterised by aggravation and/or blockage of the pilosebaceous unit. The use of natural items as affordable and secure sources of potential chemicals has grown in popularity. Honey has strong antibacterial properties that work against a variety of germs. A number of processes, including high osmolarity, acidic pH, hydrogen peroxide generation, and the presence of nonperoxide chemicals, enable honey to combat germs. Additionally, cinnamon can affect many bacteria by rupturing cell membranes, inhibiting ATPase, blocking membrane porins, and having an anti-quorum sensing action. Because of the interactions between its many ingredients, honey and cinnamon mixtures have demonstrated critical interactions such as synergistic, additive, and antagonistic effects. As a result, honey and cinnamon are both viable options for creating novel antibacterial agents.

Keywords: *P. acnes*; Honey; pH

Introduction

Acne is the leading skin condition among adolescents aged 15-25 years. It starts very early in puberty. It mainly affects the face and includes the back, shoulders and chest as non-face parts [1]. While acne can be caused by a variety of factors, including hormonal imbalances, bacterial infections and immune sensitivities, it is typically classified as a long-term inflammatory condition that affects sebaceous gland-rich areas of the body [2]. Hyper-keratization is one of the main causes of *acne vulgaris*. Sebaceous follicles become blocked, leading to abnormal keratosis of the infundibula. The increased secretion of sebaceous glands due to androgens, and the microbial colonization of the pilosebaceous unit by the *P. acnes*, leads to perifollicular infection. Increased sebaceous gland activity leads to the proliferation of *p. acnes*. *P. acnes* is an anaerobic bacterium that secures sebum from the pilosebobic ducts [3]. Acne is caused by a complex set of events that include four key pathophysiological aspects: inflammation, bacterial colonisation and proliferation, primarily by Cutibacterium acnes, hyperplasia and hyperproduction of sebaceous cells, and hyperkeratinization of the sebaceous ducts [4]. Four primary

pathophysiological components are involved in the multifactorial aetiology of acne: sebaceous hyperplasia and hyperproduction; sebaceous duct hyperkeratinization; and bacterial colonisation and proliferation, primarily by Cutibacterium [5]. There are many different therapy options for *acne vulgaris*, such as hormonal, anti-androgen, or antiseborrheic medications, as well as retinoids, isotretinoids, keratolytic soaps, alpha hydroxy acids, azelaic acid, and salicilic acid [6]. Since herbal extracts can target different molecular pathways of acne aetiology, they may be a less harmful option to medications [7]. If medication is taken for an extended length of time, the bacterium that causes acne becomes resistant to it. Compared to allopathic medication, herbal therapy is growing in popularity because of its low toxicity and side effects [8].

Figure 1

Honey and its antibacterial activity

Honey is a naturally occurring sweetener that is also a gift from nature to humanity. The amazing qualities of natural honey are attributed to a variety of substances. Because of its antibacterial qualities, it has drawn the attention of researchers, and a large number of study articles have been written on the subject [9]. Applying honey to severely infected cutaneous wounds has been shown in clinical research to enhance tissue repair and quickly remove infection from the wound [10]. It is also clear that honey stimulates other immune system components, such as phagocyte activity and B- and T-cell proliferation. Antibody production is boosted by honey. This is thought to be caused by the honey effect, which boosts immune function and has antibacterial properties [11].

Figure 2

Honey and its anti-inflammatory activity

The anti-inflammatory properties of honey, along with its stimulatory effects on granulation and epithelialization, aid in the quick reduction of pain and edoema [12,13]. Through moist healing, hypertrophic scarring can be reduced [14,15]. Moreover, honey promotes angiogenesis, granulation, and epithelialization, all of which hasten the healing process [16-18]. Tumour necrosis factor (TNF-alpha) and other growth factors can be produced by honey, which can set off a chain of events that promotes angiogenesis and the growth of fibroblasts and epithelial cells [19]. Actually, a substance found in honey called 5.8 kilodalton has the ability to cause macrophages to respond in a way that speeds up and initiates the synthesis of growth factors that influence fibroblasts and epithelial cells Prostaglandins and nitric oxide, for example, are important participants in the inflammatory process [20].

Cinnamon and its medical activities

Since ancient times, people have used cinnamon for its flavour, as a condiment, and even for medical purposes [21]. In aromatherapy, which is the therapeutic application of plant essential oils that can enter the body through the skin or olfactory system, cinnamon essential oil may also be utilised [22]. A native of Sri Lanka, cinnamon is a tropical Asian spice made from the inner bark of various Cinnamomum trees [23]. Cinnamon has several medical uses, such as treating flatulent dyspepsia, influenza, cough, bronchitis, angina, palpitations, infections, and lowering blood sugar in diabetics [24]. Cinnamon has demonstrated some efficacy against acne-causing microorganisms in certain research findings. One of the main ingredients in cinnamon, cinnamonaldehyde, has

anti-inflammatory properties. It prevents the synthesis of nitric oxide, which is the cause of inflammatory diseases in humans. Additionally, it has been demonstrated that cinnamon inhibits the synthesis of the pro-inflammatory chemical COX-2. As a result, cinnamon has anti-inflammatory and antibacterial qualities. Unlike the cinnamaldehyde present in root bark oil and cinnamon leaf oil (eugenol), cinnamon bark oil's principal constituent is camphor [25]. Interestingly, cinnamon essential oil has also demonstrated a substantial cytotoxic activity. As a result, some research indicates that cinnamon's strong antibacterial activity may be partially attributed to its toxic effects [26].

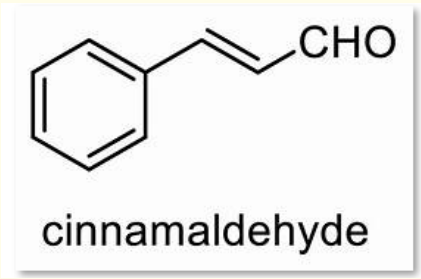

Figure 3

According to a 2017 study, cinnamon bark ethanol extract and sterilised and pasteurised Iranian honey have combined to exhibit synergistic antibacterial action against Streptococcus mutans bacterium. The combination has been recommended for use in the prevention of dental caries and to streamline S. mutans therapy [27]. Strong antimicrobial properties have been documented for both honey and cinnamon. As a result, numerous research have been conducted to examine the combined impact of honey and cinnamon on bacteria in order to determine whether or not the two products would have a stronger combined effect. Antimicrobial agent interactions can be categorised as antagonistic, additive, or synergistic [28].

Material and Method

Materials

Honey

Honey that is Sourced Locally. This honey is purchased from a respectable local market and goes through a comprehensive pharmacological testing process to guarantee its safety and quality before being used in skincare products. A thorough examination of the honey's chemical makeup, purity, and any allergies or pollutants is required for pharmacological testing. The thorough testing procedure ensures that the honey satisfies legal and industry criteria, making it a dependable and secure component for skincare products.

Figure 4

As a naturally occurring humectant, honey has amazing moisturizing qualities that support skin hydration and replenishment. Its antibacterial qualities can help fight acne and promote clear, healthy skin, and its high antioxidant concentration helps shield the skin from environmental harm and premature aging. This locally obtained honey functions as a nourishing base ingredient in a honey and cinnamon face pack, enhancing the skin's appearance and texture while balancing out the other ingredients. It is the best option for people looking for natural skincare solutions because of its shown safety and effectiveness.

Customers may trust that the product is pure and suitable for use on skin because pharmacologically evaluated honey is a part of the recipe. This focus on quality control demonstrates our dedication to providing our esteemed clients with reliable and efficient skincare solutions.

It has antimicrobial properties, so it can help stop bacteria from acne. The honey has a natural anti-bacterial property to draw out

buggers from the skin. Two tablespoons of honey and one teaspoon of cinnamon mixed together until they are thoroughly blended and have formed a sort of paste before application to acne. Honey and cinnamon (literally killer combo when it comes to acne) act as killing agent when it applies to acne area.

Cinnamon

Sourced from reliable vendors, the powder goes through extensive quality inspections to guarantee purity and safety before being incorporated into the face pack recipe. The inner bark of Cinnamomum trees is the source of cinnamon, which has several advantages for skin health.

Figure 5

Because of its high concentration of advantageous components, such as cinnamaldehyde, which has antibacterial qualities that can help fight germs that cause acne, the cinnamon powder that is used has been chosen with care. Moreover, antioxidants included in cinnamon help shield the skin from oxidative stress, which keeps the complexion looking young.

Before being added to the face pack, the cinnamon powder is carefully tested to ensure that it is both potent and free of impurities. Strict guidelines are followed during the testing procedure to ensure that cinnamon powder satisfies the requirements for safe use in skincare products.

When it comes to the honey and cinnamon face pack, cinnamon is an additive that works in concert with honey to maximize its benefits for skin health. These organic ingredients work in concert to provide the skin with protection, moisture, and renewal.

The use of premium cinnamon powder demonstrates our dedication to offering customers skincare products that are dependable, safe, and effective. Our commitment to quality control guarantees that our face pack formulation meets the highest safety and efficacy standards while producing the best possible outcomes.

Method of preparation

It has antimicrobial properties, so it can help stop bacteria from acne. The honey has a natural anti-bacterial property to draw out buggers from the skin. Two tablespoons of honey and one teaspoon of cinnamon mixed together until they are thoroughly blended and have formed a sort of paste before application to acne. Honey and cinnamon (literally killer combo when it comes to acne) act as killing agent when it applies to acne area.

Selection and sourcing of ingredients

Start by choosing premium ingredients for the mask made of honey and cinnamon. Make sure the honey is obtained locally and has undergone safety and purity testing using pharmacology. Similarly, get cinnamon powder from reliable vendors who have a solid reputation for producing high-quality goods.

Setting up equipment

Get all of the equipment needed and make sure it is clean and sterilized before you begin the preparations. This covers spatulas, measuring spoons, and mixing bowls.

Measurement of ingredients

Based on the chosen composition, measure the necessary amounts of cinnamon powder and honey. Usually, one part cinnamon powder to two parts honey is used, but you can change this based on your skin type and preferences.

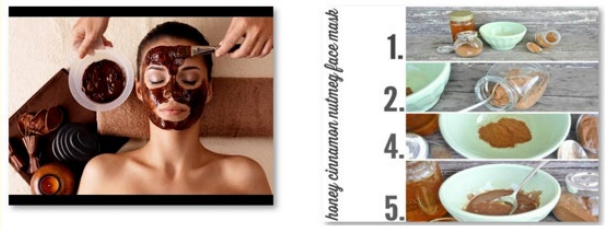

Figure 6

Combining the ingredients

Measure out the honey and cinnamon powder and put them in a clean mixing dish. The ingredients should be well combined using

a spoon or spatula to create a smooth, uniform paste. Make sure the cinnamon powder is mixed evenly throughout the mixture and that there are no lumps.

Consistency adjustment

You can change the proportion of honey to cinnamon powder to suit your taste and the consistency you want for the mask. To get the right consistency, thin up any excess mixture with a little water or aloe vera gel. On the other hand, you can add extra cinnamon powder if the mixture seems too thin.

Testing for stability and storage

Stability testing should be done once the honey and cinnamon mask is made to make sure the formulation holds up over time. Mark the mask with the preparation date and store it in a sterile, airtight container. The container should be kept out of direct sunlight in a cool, dry environment.

Instructions for applications

Make sure your skin is completely clean and dry before putting on the mask to avoid leaving any makeup, oil, or grime behind. Apply a thin, even coating of the honey and cinnamon mask, avoiding the mouth and eyes, to the damaged parts of the face or all over it with clean hands or a brush.

Figure 7

Application time

To enable the active ingredients to seep in and do their job, leave the mask on your skin for ten to fifteen minutes. You could feel a little tingly during this period, which is typical and shows that the mask is doing its job.

Cleansing and hydration

When the allotted amount of time has passed, carefully rinse off the mask with lukewarm water and exfoliate your skin in gentle circular strokes. Using a fresh towel, pat the face dry, then apply your preferred moisturizer to seal in moisture and maintain the skin's supple and soft texture.

Frequently used

For maximum results, use the honey and cinnamon mask for acne treatment 2-3 times per week, depending on the severity of your acne and the tolerance of your skin. It's important to pay attention to your skin's needs and modify the frequency if necessary to avoid overusing it and causing irritation.

These instructions will help you create a honey and cinnamon mask that will help treat acne by utilizing nature's healing powers.

Conclusion

In conclusion, those looking for natural acne treatment options may find success with the use of honey and cinnamon in face mask recipes. We have examined the many advantages of honey and cinnamon in this review, both separately and in combination, for treating acne and enhancing skin health.

Because it has so many medicinal benefits, honey—which is purchased from local markets and carefully verified for purity and safety—becomes a powerful ingredient in beauty products. Since honey is a naturally occurring humectant, it efficiently hydrates the skin, assisting in preserving ideal levels of hydration and averting dryness, which is a typical worry among acne patients. Additionally, because of its antibacterial and antioxidant qualities, which promote faster wound healing, lower inflammation, and limit bacterial development, acne symptoms can be relieved. These organic components work together to produce a potent face mask that can effectively cure acne-prone skin when mixed with honey and cinnamon. The antibacterial and anti-inflammatory qualities of cinnamon are enhanced by the humectant qualities of honey, creating a comprehensive skincare regimen that targets several facets of acne pathophysiology.

Additionally, the use of premium cinnamon powder and honey from nearby sources guarantees the face mask's effectiveness and safety, giving customers confidence in using it. It is important to remember that while face masks with honey and cinnamon seem to be a promising treatment for acne, individual responses may differ and results may not show up right away. Consistency and

patience are essential in any skincare routine, and it's a good idea to do a patch test before using a product widely to check for any potential sensitivities or allergic reactions.

In summary, this review's data highlights the potential of honey and cinnamon face masks as a safe and efficient complementary treatment for acne. In order to clarify the mechanisms of action, refine the formulation parameters, and confirm the long-term safety and efficacy of these botanical treatments, more investigation and clinical trials are necessary. Honey and cinnamon face masks have the potential to be useful additions to the arsenal of acne treatments, providing a mild yet effective substitute for clearing up and improving the health of the skin with more research and development.

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