



All-Ex CareTM *garlic*



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All- Ex Care[™] Garlic Based on Organic Garlic Plant

The garlic (*Allium sativum* L.) is a vegetable in bulb structure. Each bulb may contain up to 12 cloves. These cloves are rich in sulfuric compounds such as allicin and allyl sulfide.

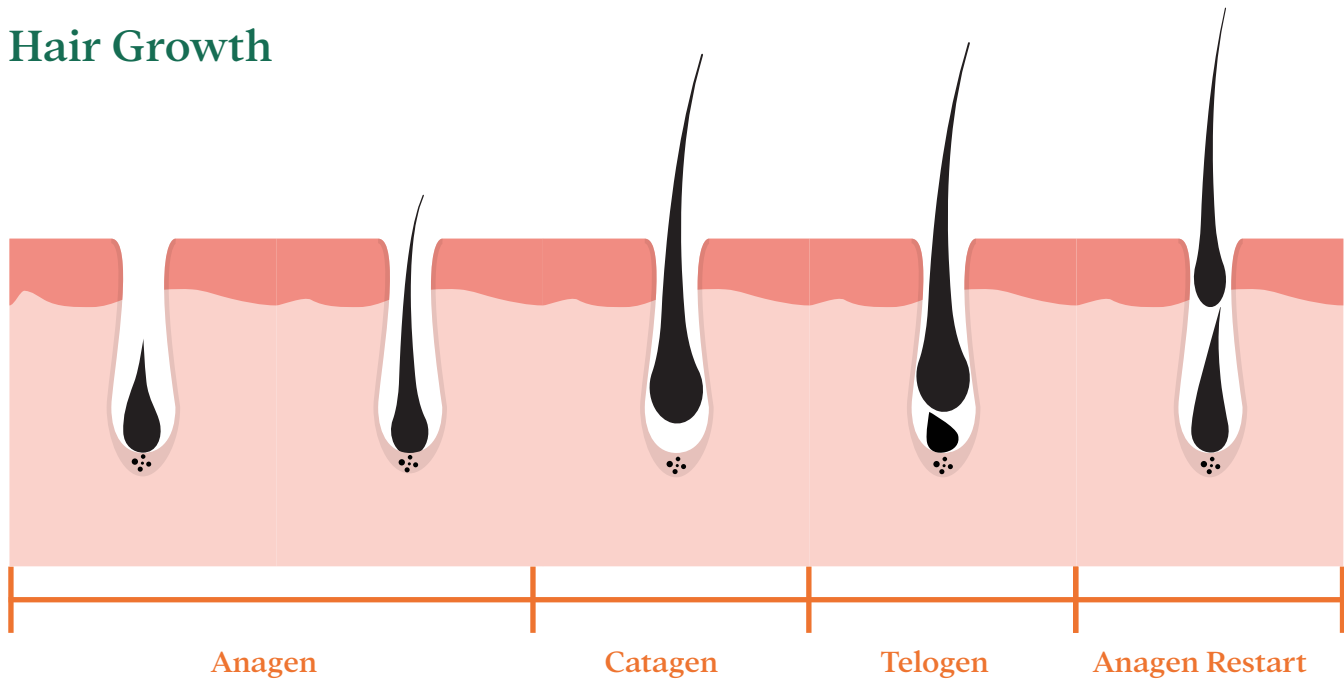
Cloves from organic garlic were selected as a source of *All- Ex Care*[™] Garlic because of their richness in phytonutrients. These 'health promoting phytochemicals' protect plants from pathogens, disease, extreme UV and herbivores. Besides many of these phytochemicals have beneficial effect on human body. Phytochemicals highly abundant in garlic bulb because plant uses this body part as a storage for offsprings.

An Organic Garlic Extract to Rebalance the Hair Life Cycle

Based on organic garlic cloves produced by expert farmers from Kastamonu province in Türkiye, Garlic reduces hair loss by inducing blood flow to hair follicle.

Hair loss can occur in anyone. It is caused by an imbalance in the hair growth cycle. General characteristics of hair loss are reduced hair growth (anagen phase) and increased hair loss (telogen phase).

Hair Growth



Garlic is excellent for hair growth. It helps in decreasing hair fall, boosts regeneration of new hair follicles, removes harmful toxins from the scalp, enhances hair texture, and reinforces the hair roots. The allicin in garlic helps in increasing blood circulation in the scalp which in turn reduces hair fall and helps in stimulating hair growth. Garlic also has anti-bacterial and anti-fungal properties that help in treating dandruff and itchy scalp. The sulphur compounds in garlic reduces the severity of dandruff and prevents it from coming back.

Claim Ideas for *All- Ex Care*TM Garlic

- Stimulates hair growth from follicle
- Selenium and zinc rich garlic oil can diffuse hair strands to prevent breakage
- Cleanses scalp from harmful microorganism by high concentration sulfuric compound content such as allicin and allicin-derived compound
- Helps collagen regulation by inducing human fibroblast cell
- Shows antioxidant effect by neutralising harmful compound in the human cell
- Reduces inflammation on the skin by decreased cytokine efficiency
- Protects skin from UV-B related damage
- *All- Ex Care*TM Garlic contains a large number of skin-protective polyphenols

Applications

- Anti-hair loss, hair-regrowth formulations
- Anti-aging hair and skin care products
- Anti-inflammatory cream/lotion
- Anti-bacterial and anti-fungal effect on product
- Sunscreen formulations



Marketing Benefits

- Used in human life at least for 5000 years
- Organic source of the plant



Hair Loss Is linked to an imbalanced hair growth cycle

Hair Loss Has Several Causes

In people with healthy hair, about 85–90% of the hair is in the anagen phase and the other 10–15% is in the telogen one. Hair loss, also called alopecia, is caused by an imbalance of the hair growth cycle which results from several factors (androgen metabolism, genetics and stress). It is characterized by:

- changes in the proportions of anagen and telogen hair: the number of anagen hairs reduced and at the same time too many hairs remain in the telogen phase.
- a decrease in the duration of anagen phase leading to shorter and thinner hair
- a prolongation of the interval separating the loss of a hair in telogen phase and the emergence of a replacement anagen hair.

Women and Men are Affected but in Different Ways

Hair loss affects at least 50% of men and about 25% of women by the age of 50. 40% of women aged 70 and over are concerned.

Besides, women experience diffuse hair loss and tend to lose the hair on the top of their head. Hair loss in men may be much more extensive, affecting mostly the temporal areas and the top of the head.

Garlic Extract in Alopecia Areata Treatment

Alopecia areata is characterized by round or oval patches of nonscarring hair loss. For this study total of 18 patches of alopecia areata from different patients were treated. All patches were treated by topical garlic extract twice daily, for two months. Hair growth started at the end of second week of treatment in eight patches (44.4%), after four weeks in seven patches (38.9%), and within six weeks in three patches (16.7%). All patients responded to this treatment. This study shows us that garlic extract is an efficient and rapid topical treatment for alopecia areata.



Figure 1: Alopecia areata before (A) and four weeks (B) after treatment.



Figure 2: Alopecia areata before (A) and six weeks (B) after treatment.

Antibacterial Activity: Garlic extract inhibits the growth of Gram-positive and Gram-negative bacteria such as *Staphylococcus*, *Streptococcus*, *Micrococcus*, *Enterobacter*, *Escherichia*, *Klebsiella*, *Lactobacillus*, *Pseudomonas*, *Shigella*, *Salmonella*, *Proteus*, and *Helicobacter pylori*. This inhibition of garlic extract is directly proportional with the presence of alliinase enzyme and alliin substrate. This enzyme converts alliin to allicin.

Antifungal Activity: Allicin showed a fungicidal effect against numerous yeasts and fungi, including *Candida albicans*, *Cryptococcus trichophyton*, *Histoplasma capsulatum* and *Cryptococcus neoformans*.

Garlic Extract against Human Hair Dandruff

Human hair dandruff (HDD) is a common, unpleasant scalp disorder that is one of the major concerns for health-conscious people over the world. In molecular characterization, it confirms the isolated bacterial strain is *Staphylococcus aureus* that leads to identifying the associated genes or functional group for dandruff pathogenesis. In the antimicrobial test, *Staphylococcus aureus* shows the highest sensitivity to *Allium sativum* among all the plant extracts that recommend a new prospect for developing an anti-dandruff compound.

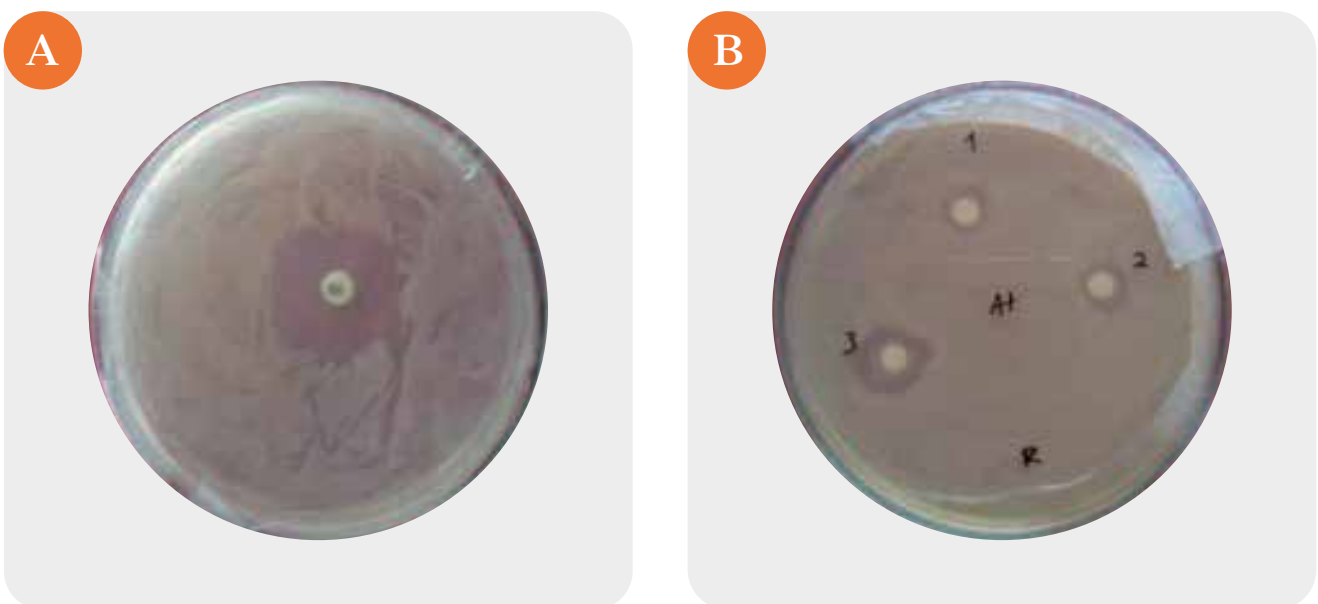


Figure 3: Antimicrobial activities of drug discs against *Staphylococcus aureus*.
(A) Kanamycin, (B) *Allium sativum* extract

