WHITENING DROPS

GOUTTES ECLAIRCISSANTES

What is in **Vagival WHITENING DROPS?**

1. Boerhaavia Diffusa Root Extract (Standardized in Boeravinones)
2. 3-O-Ethyl Ascorbic Acid
3. Alpha-Arbutin
4. Kojic Acid
5. Niacinamide
6. Licorice Extract





BOERHAAVIA DIFFUSA ROOT EXTRACT
(Standardized in Boeravinones)

- It contains diverse components, such as flavonoids, alkaloids, steroids, triterpenoids, lipids, lignins, carbohydrates, proteins, and glycoproteins.
- Boerhaavia Diffusa Root Extract is standardized in boeravinones. Boeravinones have been considered as one of the most interesting *Boerhaavia diffusa* metabolites, from a therapeutic point of view. Boeravinones are the main rotenoids contained in its root, and several different ones have been identified: Boeravinone A to F.
- The energetic in silico study demonstrated that Boeravinone B is a potential active ingredient to act as a natural PPARγ agonist.

PIGMENTATION REGULATION MECHANISMS

Peroxisome proliferator-activated receptors (PPARs) are ligand-activated transcription factors belonging to the nuclear hormone receptor superfamily. The study of the action mechanisms of PPARγ on the cells responsible for skin pigmentation (melanocytes) has not been as extensive as for other cellular types.

The first studies on PPARγ influence on melanogenesis performed on melanoma cells demonstrated that PPARγ activator compounds inhibited their proliferation in a dose-dependent fashion, and reduced tyrosinase production and/or the average lifespan of this enzyme (Mössner, 2002; Placha, 2003; Wiechers, 2005). The presence of PPARγ in normal melanocytes was also confirmed (Sertznig, 2008), so the action of PPARγ agonists on these cells could also be expected.

In summary, it is observed that the main consequence of PPARγ activation on melanocytes is the reduction of tyrosinase production, which translates to a reduction in melanogenesis. (Wiechers, 2005).

IN VITRO EFFICACY PPARγ

BINDING AFFINITY

the binding affinity of Boerhaavia Diffusa Root Extract (Standardized in Boeravinones) was verified with a PPARγ competitive binding assay (PolarscreenTM PPAR Competitor Assay).

Boerhaavia Diffusa Root Extract (Standardized in Boeravinones) was evaluated at different concentrations to determine the IC50 (concentration of the active ingredient which replaces 50% of the fluorescent ligand bound to the PPARγ), using rosiglitazone as a positive control.

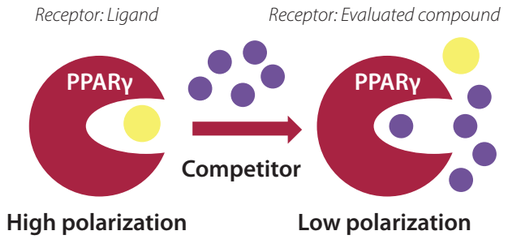


Figure 5. PPARγ competitive affinity binding assay.

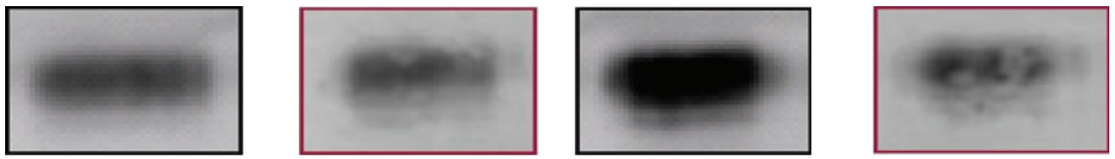
Boerhaavia Diffusa Root Extract (Standardized in Boeravinones)shows good binding affinity to PPARγ, showing an IC50 between 0.24 % and 0.33%. Acting as a natural agonist

IN VITRO EFFICACY

STUDY ON DEPIGMENTATION ACTIVITY IN HUMAN MELANOCYTES

Evaluation of tyrosinase expression

To determine the amount of tyrosinase, the Western Blot technique was used, with the primary mouse antibody anti-Tyrosinase. The bands obtained were quantified by densitometry. The results obtained with the active ingredient Standardized in boeravinones were compared to a culture without any product (negative control).



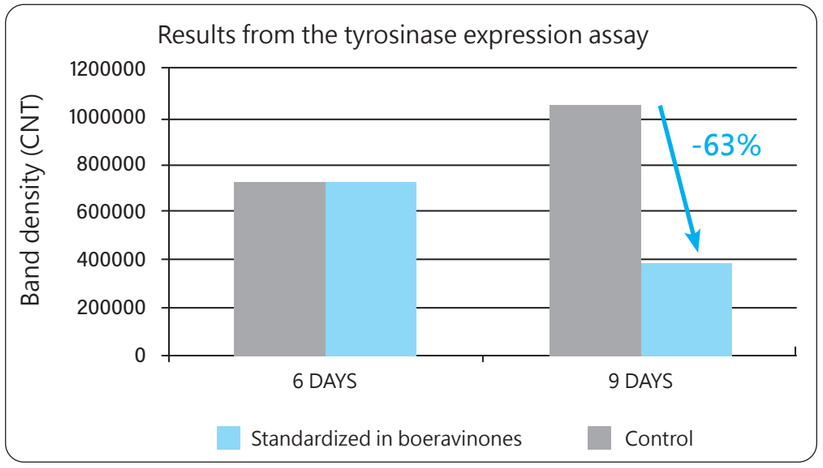
Control 6 days | Standardized in boeravinones 6 days | Control 9 days | Standardized in boeravinones 9 days

The images of the Western Blot bands may be seen below, corresponding to the enzyme tyrosinase throughout the different incubation times.

It was observed in the negative control culture that the expression of the enzyme tyrosinase had significantly increased upon increasing the melanocyte incubation time. This reflects important melanogenic activity in the cells, with a consequent increase in tyrosinase production.

After 9 days of incubation, a very faint band was observed that reflected a lesser quantity of tyrosinase. We can thus see that, as a consequence of PPARγ activation, Standardized in boeravinones causes a decrease in the expression of the key enzyme of melanogenesis in human melanocytes.

Reduction of tyrosinase expression

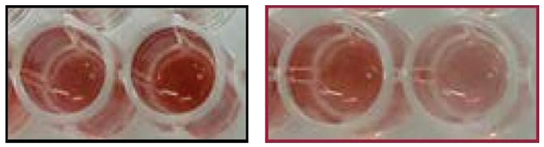


Standardized in boeravinones reduces tyrosinase enzyme formation by 63%, therefore it causes a reduction of the melanogenesis

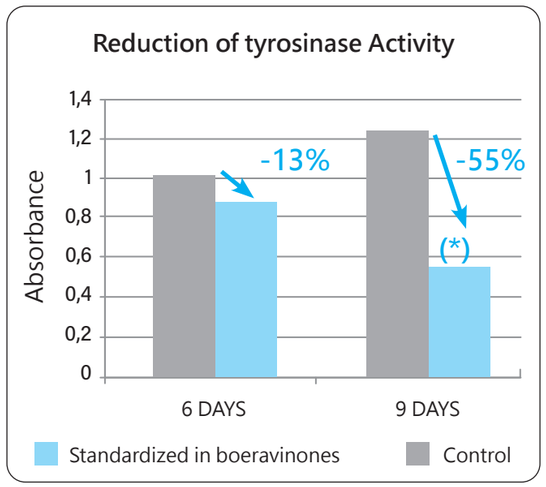
EVALUATION OF TYROSINASE ACTIVITY

The coloration of the cultures during the measurement of dopa oxidase activity. Greater coloration in the well indicates greater enzymatic activity. Low dopa oxidase (coloration) activity is observed in the cultures treated with **Standardized in boeravinone,** and this decrease is most evident after 9 days of incubation.

Representative image of the Dopa-oxidase activity

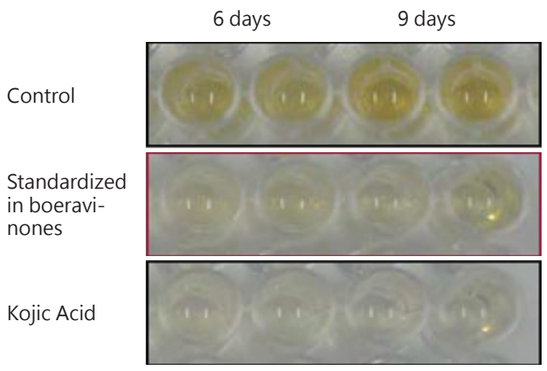


Standardized in boeravinones reduces tyrosinase activity by 55% and, consequently, is a powerful depigmentation agent.



EVALUATION OF MELANIN QUANTITY

The following figure shows an image representing the melanin assay, where we can see the production of melanin in the different cultures, the different incubation times, and in duplicate. Low production (coloration) of melanin is observed in the cultures incubated with Standardized in **boeravinones** and with the positive.



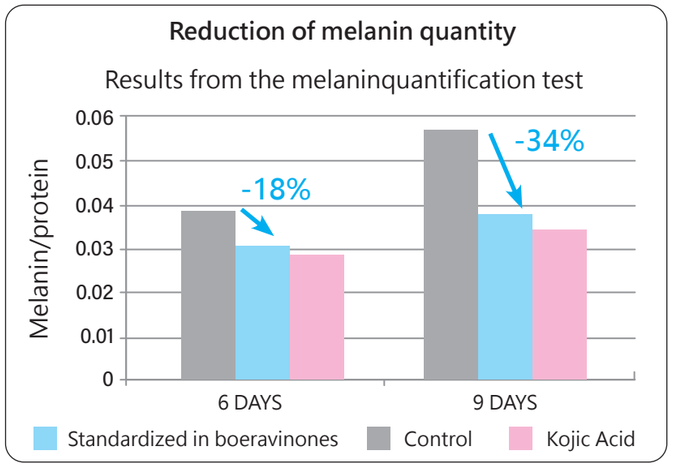
Two controls were used: a culture without any product (negative control) and a culture with 100 ppm Kojic acid (positive control).

This study showed how the decrease in tyrosinase activity and expression translates to a real decrease in the amount of pigment synthesized by human melanocytes

These results showed **a significant decrease in the melanin/total protein** ratio after 9 days of incubation with the active ingredient **Standardized in boeravinones.** These ratios are very similar to those obtained with the positive control (Kojic acid) under the same assay conditions.

EVALUATION OF MELANIN QUANTITY

The reduction was 11% at 6 days of incubation, and 26% after 9 days. In contrast, **Standardized in boeravinones** did not cause any protein reduction, recording cell viability practically equal to that of the control culture.

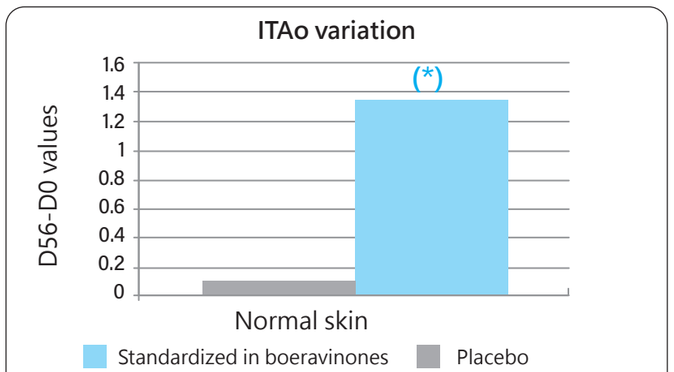


Standardized in boeravinones decreases the amount of pigment synthesized by melanocytes by 34%, without affecting their viability.

A study was carried out with 20 Asian volunteers to evaluate the efficacy of Standardized in boeravinones as a cosmetic ingredient designed to reduce cutaneous pigmentation. 56 days of twice daily application in normal skin and spots

EVALUATION OF NORMAL SKIN, WITHOUT SPOTS

- The lightening effect was assessed with a colorimetric instrument measurement, performed with a SpectrophotometerTM CM-2600D, Minolta. It was performed on a homogeneous facial area without spots on both sides of the face (active and placebo treatment).
- The individual typological angle (ITA°) parameter was calculated. If this parameter increases, it means that the intensity of cutaneous pigmentation has decreased.
- The following chart shows the ITA° values obtained with respect to the beginning of the study, for skin without spots, and the different treatments carried out.



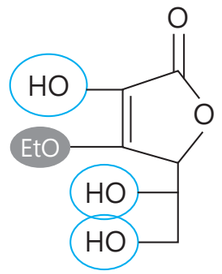
Results from the pigmentation intensity assessment (*: **Standardized in boeravinones** statistically significant in comparison with D0).

Skin treatment with Standardized in boeravinones for 56 days reduces skin pigmentation. The ITA° parameter increases up to 28% in skin without spots, with a mean variation of 3%.

3-O-ETHYL ASCORBIC ACID

Ethyl Ascorbic Acid is an etherfied derivative of ascorbic acid, one of the most stable derivates of ascorbic acid known. Ethyl Ascorbic Acid penetrates into skin where it is metabolized to ascorbic acid.

3-O-ethyl-l-ascorbic acid (EA) is an l-ascorbic acid derivative with an ethyl group at the third carbon position. This structural modification protects the 3-OH group from ionization, and thus the molecule from oxidation, but also results in changes in the physicochemical properties



Ethyl Ascorbic Acid structure

MAIN BENEFITS OF 3-O-ETHYL ASCORBIC ACID

- Ethyl Ascorbic Acid is an excellent skin whitening agent, it inhibits the activity of Tyrosinase by acting on Cu2+ and it prevents the synthesis of melanin.
- It is repairing the collagen structure and clearly increasing the synthesis of collagen. effects are resulting in a firming effect for the skin.
- It improves the complexion of the skin, giving an even tone.
- It is a very strong antioxidant, eliminating free radicals to protect the skin from environmental and intrinsic stress factors.
- Clinical tests have concluded that products containing 2% ethyl ascorbic acid can help to brighten skin and even out skin tone.

VITAMIN C WORKS IN 3 MAIN ABILITIES

- Antioxidant and anti-inflammatory
- Collagen booster
- Skin brightener

VITAMIN C AS ANTIOXIDANT

Vitamin C is one of the most potent antioxidants in the skin. It neutralizes the oxidative stress by a process of electron transfer and/or donation.

- Protection against photoaging.
- Protection against UV-induced immunosuppression.
- Protection against photocarcinogenesis.

VITAMIN C AS COLLAGEN BOOSTER

- Vitamin C is essential for collagen biosynthesis. It has been proposed that Vitamin C influences quantitative collagen synthesis in addition to stimulating qualitative changes in the collagen molecule and also responsible for stabilizing and cross-linking the collagen molecules.
- Clinical studies have shown that the topical use of Vitamin C increases collagen production in young as well as aged human skin.

VITAMIN C AS SKIN BRIGHTENER

- Vitamin C is a depigmenting agent. It interacts with copper ions at tyrosinase-active sites and inhibits the action of the enzyme tyrosinase; the main enzyme responsible for the conversion of tyrosine into melanin, thereby decreasing melanin formation.
- vitamin C has been shown to suppress melanin production which resulting in skin brighter.

ALPHA-ARBUTIN

Arbutin is a compound of hydroquinone and D-glucose, and it has been over 30 years since there have been serious studies on the skin lightening action of this substance

- Arbutin has the effect of reducing melanin content at a concentration that has little effect on the viability of cultured human melanocytes.
- Arbutin was shown to inhibit melanin production in B16 cells stimulated by α-MSH and abrogate the hyperpigmentation effects of α-MSH in brownish guinea pig and human skin explants in organ culture experiments.
- Kiato et al. reported that α-arbutin inhibited monophenolase activity of mushroom TYR with potency slightly lower than arbutin or hydroquinone.
- Funayama et al. reported that α-arbutin inhibited diphenolase activity of TYR derived from murine melanoma 10 times more potently than β-arbutin.
- The treatment of the human skin model with α-arbutin (250 μg per tissue) reduced melanin content to a 40% level of the control, without causing cell death. These results indicate that alpha-arbutin is an effective and safe ingredient for skin-lightening.

- The study group (n = 54) applied the cream containing the plant extract (final concentration of arbutin 2.51%) twice a day on the discolored side for 8 weeks. The results showed that the cream with the plant extract decreased melanin level in the skin pigmentation spot, compared to the control group (n = 48) applied with a placebo cream without the active ingredient. During 8 weeks of application, the melanin level of the test group decreased from 182.60 ± 39.41 to 168.76 ± 36.30 ($p < 0.000001$), and there was no significant change from 158.9 ± 34.41 to 166.84 ± 39.72 in the control group. Clinical improvement was observed in 75.86% of the female patients with melasma and 56.00% of the female patients with solar lentigines.

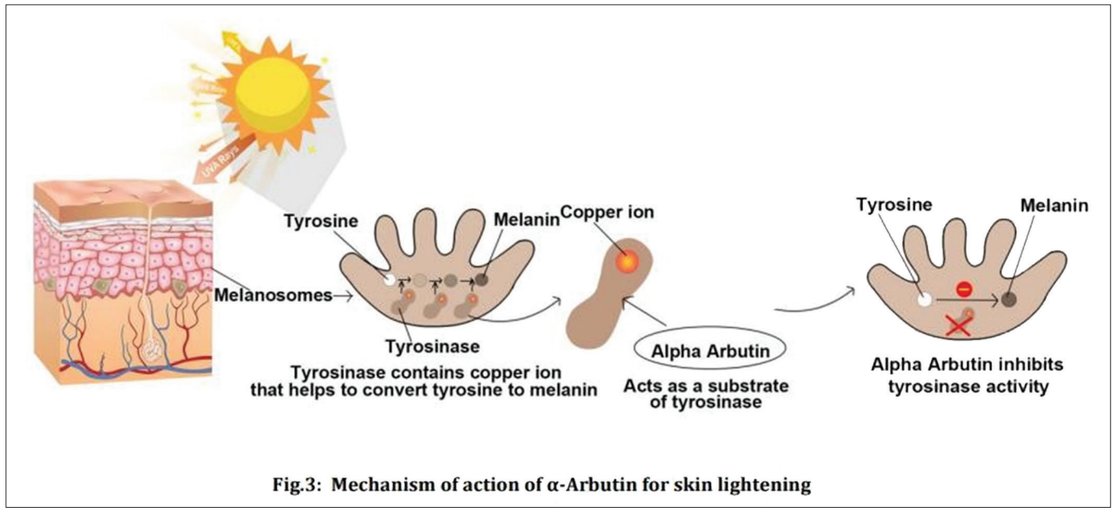


Fig.3: Mechanism of action of α-Arbutin for skin lightening

Alpha Arbutin as a Skin Lightening Agent: A Review. NIKHIL CHANDORKAR, SRUSHTI TAMBE , PURNIMA AMIN, CHANDU S MADANKAR. International Journal of Pharmaceutical Research | Apr - Jun 2021 | Vol 13 | Issue 2

NIACINAMIDE (VITAMIN B3)

NIACINAMIDE IS A MULTI-TALENTED INGREDIENT OF THE VITAMIN B GROUP (SOLUBLE VITAMIN B3)

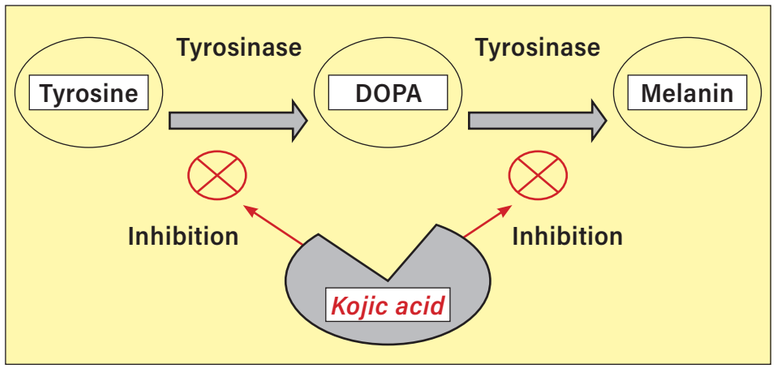
Niacinamide combats the visual effects of aging on several fron ts:

- It improves the skin barrier function through well documented and proven mechanisms such as the reduction of TEWL.
- It positively impacts skin conditions by decreasing the appearance of skin redness. It can be taken into account as an option to make sensitive skin more robust.
- It enhances skin appearance and texture by stimulating collagen synthesis.
- It offers a "warming up effect," that is, micro-circulation by stimulating blood flow.
- Anti-inflammatory effect on impure skin.
- It provides also interesting skin brightening properties.

KOJIC ACID

Kojic Acid is a metabolic product of the fungal species Acetobacter, Aspergillus, and Penicillium.

- Kojic acid and its derivatives are used as anti-oxidant, anti-proliferative, anti-inflammatory, radio protective and skin-lightening agent.
- It has the ability to act as a UV protector, suppressor of hyperpigmentation in human and restrainer of melanin formation, due to its tyrosinase inhibitory activity.
- Kojic acid showed the potential inhibition of cellular NF-κB activity in human keratinocytes. NF-κB activation is probably involved in kojic acid induced anti-melanogenic effect.
- Several studies are performed to evaluate the mechanisms of depigmentation and safety of Kojic Acid. They suggested that the best range of concentrations for KA topical preparation is 1% or less because in these ranges, it melts show effective and safe properties.
- Clinical studies have shown effectiveness of 1% KA cream therapy for 6 months in photo-hypersensitive melasma patients.
- Melasma patients who had used 1% KA cream were followed for 2 years and no significant side effect or adverse reaction was observed.



Kojic acid applications in cosmetic and pharmaceutical preparations. Majid Saeedi, Masoumeh Eslamifar, Khadijeh Khezri. Biomedicine & Pharmacotherapy Volume 110, February 2019, Pages 582-593.

LICORICE EXTRACT

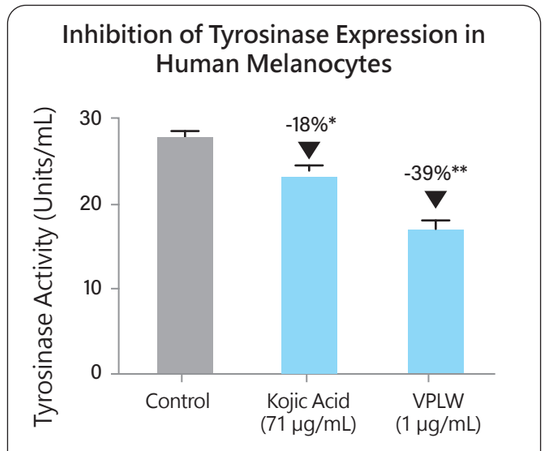
LICORICE EXTRACT (HIGH PURITY GLABRIDIN)

Lipophilic extracts of licorice root have been widely used in the cosmetics industry for several years for skin tone lightening. **A highly purified licorice extract containing minimum 95% glabridin** significantly more effective in inhibiting tyrosinase activity and melanin production than arbutin or kojic acid.

Glabridin is also known to be a potent lipophilic antioxidant that inhibits superoxide release from macrophages and elevates glutathione levels. It has been shown to protect mitochondria from oxidative damage.

KEY OF ACTIVITIES

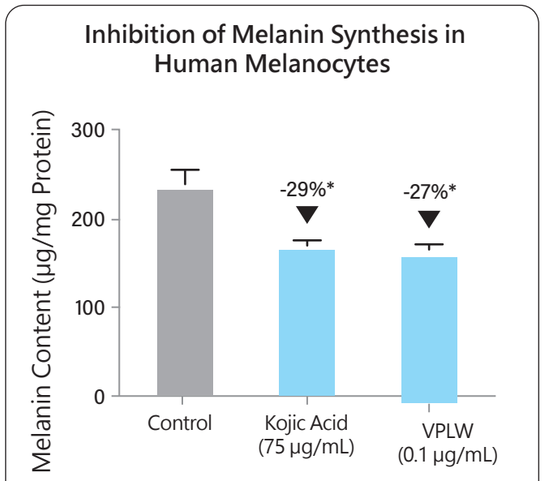
- Reduces melanin production
  - via inhibition of tyrosinase expression;
  - via inhibition of tyrosinase catalytic activity;
  - via inhibition of endothelin-1 release;
  - via phospholipase A2 inhibition.
- Lightens skin tone



* $p<0.05$, Student's t-test, compared with control
** $p<0.01$, Student's t-test, compared with control

Normal human melanocytes were treated with either test material for 6 days. The cell lysate was incubated with L-DOPA and monitored for the formation of L-DOPA chrome at 470 nm. Tyrosinase activity was quantitated based on a standard curve constructed with mushroom tyrosinase

Compared to kojic acid, a standard skin tone lightener, Licorice White is a significantly more potent inhibitor of tyrosinase expression in human melanocytes at a much lower concentration.

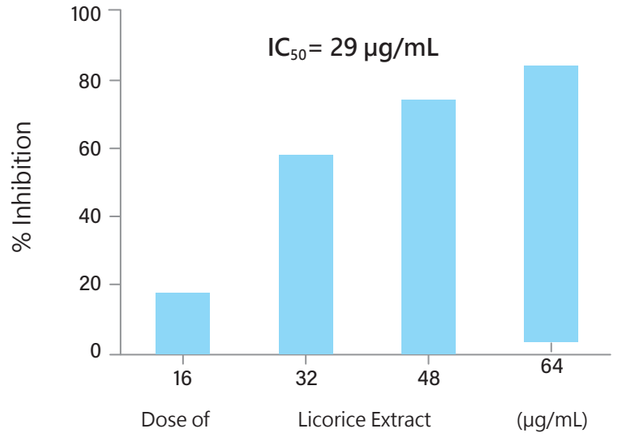


* $p<0.05$, Student's t-test, compared with control

Normal human melanocytes were treated with test materials for 7 days. Melanin contents were determined spectrophotometically.

Licorice White is a much more powerful inhibitor of melanin production than kojic acid; Licorice Extract requires a 750 times lower dose to produce the same inhibitory effect.

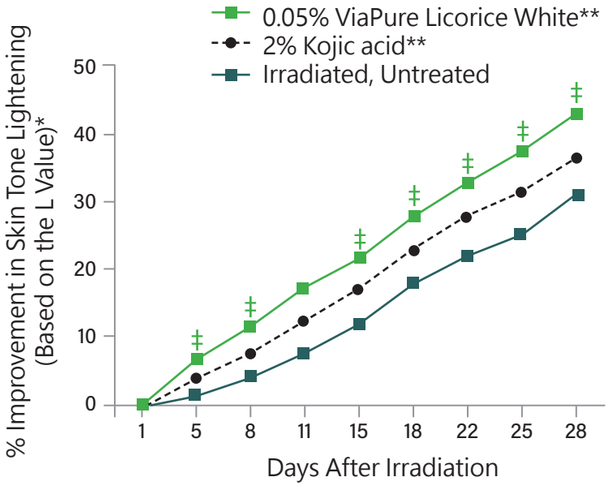
Inhibits Phospholipase A2



The assay mixture consisted of the substrate, phospholipase A2 from cobra venom, and various concentrations of ViaPure Licorice White. The reaction rate was monitored at 324 nm at 30°C.

Secretory phospholipase A2 (PLA2) is an enzyme released by epidermal keratinocytes following UV exposure or during inflammation.

Licorice Extract is a strong inhibitor of secretory PLA2, an important mediator of UV-induced or post-inflammatory pigmentation.



* Non-irradiated clear skin = 100%
** $p<0.05$ at all time points. Student's *t*-test. compared with Irradiated, Untreated Group
‡p<0.05, Student's *t*-test, compared with Kojic Acid

A panel of 10 volunteers with Fitzpatrick skin type III received 3.5 times MED of UVB on the back. The treatment regimen (once a day excluding Saturdays and Sundays) was conducted for a period of 28 days starting immediately after irradiation.

Chromameter readings were taken prior to the initial application and after various days of product use.

Licorice Extract is efficacious in skin tone lightening. 0.05% Licorice extract is a more effective skin tone lightener than 2% kojic acid.

NO ODOR SPRAY
SPRAY ANTI-ODEURS

What is in **Vagival NO ODOR SPRAY?**

1. INTIMATE PART
2. VAGINAL ODORS
3. NO ODOR SPRAY
4. STANDARDIZED HERBAL COMPLEX
5. LACTIC ACID
6. CHAMOMILE EXTRACT (CHAMOMILLA RECUTITA FLOWER EXTRACT
7. ALOE VERA EXTRACT





VAGIVAL NO ODOR SPRAY

It is a professionally formulated intimate deodorant, designed for external use, that is non-soaking and free from alcohol. The formulation supports the maintenance of a healthy pH balance, assists in neutralizing unwanted odors, and provides long-lasting freshness throughout the day, helping users feel clean, comfortable, and confident

INTIMATE PART

Intimate or private body regions refer to anatomical areas of the human body that are typically concealed by clothing in public and social contexts, in accordance with prevailing cultural, social, and religious norms. In many societies, the exposure of these regions is regarded as inappropriate or, in some traditions, a moral or religious transgression.

While definitions vary across cultures, these regions generally correspond to structures associated with sexual activity, reproduction, and excretion. Commonly included are:

- **In both sexes:** buttocks, anus, perineum, mons pubis, and inguinal (groin) region.
- **In males:** penis and scrotum.
- **In females:** vulva (including the pudendal cleft), vagina, and breasts.

VAGINA

VAGINAL ODORS

Physiological vaginal odor is normal and may fluctuate throughout the menstrual cycle. These variations are influenced by hormonal changes, the composition of vaginal secretions, and the presence of menstrual blood, all of which can alter the local microbiota and pH.

A distinctly malodorous vaginal discharge is not considered normal, particularly if accompanied by symptoms such as pruritus, burning, erythema, dysuria, or abnormal vaginal secretions. Such findings may indicate an underlying infection or pathological condition. Common etiologies include:

- **Bacterial vaginosis (BV):** often characterized by a thin, grayish discharge with a "fishy" odor due to overgrowth of anaerobic bacteria.
- **Vulvovaginal candidiasis:** typically presents with pruritus, irritation, and a thick, curd-like discharge, though odor is usually minimal.
- **Trichomoniasis:** a sexually transmitted infection causing frothy, yellow-green discharge with a strong, unpleasant odor.
- **Other infections or inflammatory conditions:** including cervicitis or pelvic inflammatory disease.

Persistent or abnormal vaginal odor warrants clinical evaluation by a healthcare professional to establish the diagnosis and initiate appropriate management.

CAUSE OF VAGINAL ODORS

Vaginal odor can arise from a variety of physiological and pathological factors. While some degree of scent is considered normal, certain circumstances may intensify or alter the odor. Common causes include:

- **Vaginal infections:** such as bacterial vaginosis, vulvovaginal candidiasis, or trichomoniasis, which can disrupt the normal vaginal microbiota and pH.
- **Poor genital hygiene:** inadequate cleansing or infrequent changing of undergarments can allow accumulation of sweat, secretions, and bacteria, contributing to odor.
- **Physiological sweating:** perspiration in the groin region may combine with natural secretions, especially during physical activity or warm climates, leading to a transient odor.
- **Post-coital changes:** sexual intercourse may temporarily alter vaginal odor due to the presence of semen, changes in pH, or exposure to latex and lubricants.

If vaginal odor is persistent, strong, or accompanied by symptoms such as abnormal discharge, itching, burning, or irritation, a medical evaluation is recommended to exclude infection or other underlying conditions.



MANAGING AND PREVENTION

The way to manage vaginal odor are

- Wash the external genital area: use mild cleansing product to wash outer of vagina and rinse off with lots of water
- Proper vagina hygeine
- Keep your vaginal area dry and free of perspiration
- Safe sex
- Cervical screening



NO ODOR SPRAY

NO ODOR SPRAY is a professionally formulated intimate deodorant designed for external use. It is alcohol-free, non-soaking, and pH-balanced to help maintain the natural vaginal environment. The formulation neutralizes unwanted odors and provides a long-lasting sensation of freshness and comfort, supporting daily confidence and hygiene.

ACTIVE INGREDIENTS

- **Standardized Herbal Complex (Terpinen-4-ol, Salicylic Acid, *Salix alba* [Willow] Bark Extract):** possesses antimicrobial and keratolytic properties, contributing to odor control and skin health.
- **Lactic Acid:** helps support the acidic pH of the vulvovaginal region, promoting a healthy microbiota and inhibiting overgrowth of pathogenic organisms.
- **Chamomile (*Matricaria recutita*) Extract:** provides soothing, anti-inflammatory, and antioxidant effects.
- **Aloe Vera (Aloe barbadensis) Extract:** hydrates, calms, and protects sensitive skin.

STANDARDIZED HERBAL COMPLEX:

TERPINEN-4-OL + SALICYLIC + SALIY ALBA (WILLOW) BARK EXTRACT

To provide an effective prebiotic active ingredient obtained from natural sources.

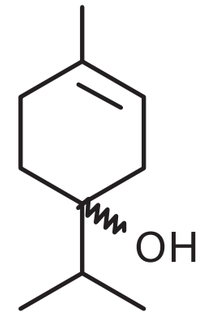
1.1. TERPINEN-4-O

ANTIMICROBIAL

It has been evaluated to observe its action against a wide range of microorganisms:

TABLE SHOW: EFFICACY OF TERPINEN-4-OL AGAINST MICROORGANISMS

ORGANISM	MIC (%)
Staphylococcus aureus	0.25
Coryneform spp.	0.01
Propionobacterium acnes	0.10
Escherichia coli	0.25
Pseudomonas aerurinosa	0.50
Aspergillus niger	0.05
Pityrosporum ovales (M. furfur)	0.05
Tricophyton mentagrophytes	0.05
Tricophyton rubrum	0.05



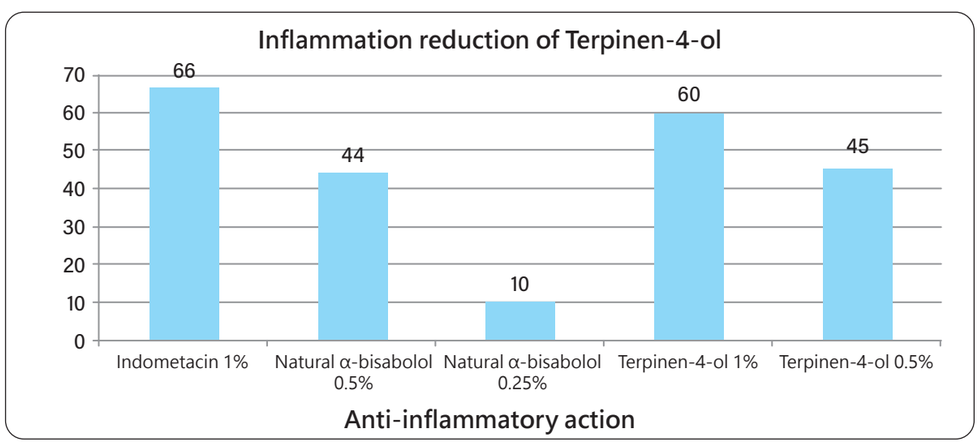
Terpinen-4-ol

Terpinen-4-ol is obtained by fractional distillation of tea tree oil (*Melaleuca alternifolia*). Its color varies from transparent to pale yellow and it has a characteristic odor mixture of earth, wood and pepper.

ANTI-INFLAMMATORY

The anti-inflammatory efficacy was evaluated by studying the reduction of erythema, induced by ultraviolet radiation using solar simulation.

Results show that, in addition to antimicrobial activity, terpinen-4-ol has an anti-inflammatory action (Hart PH, 2000).



1.2. WILLOW EXTRACT

The main constituents are polyphenols, flavonoids and salicylic derivatives. Polyphenols (8- 20%) are represented by catechic type tannins. Flavonoids (0.2-1.5%) are characterized by the glucosides of isoquercitrin, naringin, isosalipurposide, quercetin and isorhamnetin.



Salicylic derivatives (1.5-11%) are represented by salicin or salicoside, which is a glucoside in saligenin, salicortin, tremulacin and salireposide. It also contains organic acids (salicylic, vanillic, syringic, caffeic, p-hydroxybenzoic, coumaric and ferulic acid), as well as oligo- and polysaccharides (pectins, galactans and arabinans).

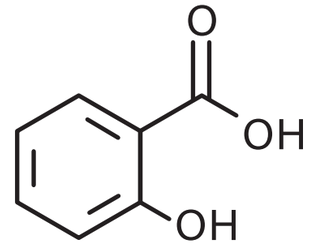


"ITS ANTI-IRRITANT, ANTI-SEBORRHEIC AND KERATOLYTIC ACTION"

One of the best known and most representative is salicylic acid (2- hydroxybenzoic acid), with the molecular formula C7H6O3 and CAS number: 69-72-7. This substance is described in many pharmacopoeias (F. Eur, USP 25, F China, F Int., F. Japan, F Pol.).

Salicylic acid is applied topically to treat keratolytic and skin desquamation disorders.





Salicylic acid

IN VITRO EFFICACY

A study has been carried out to determine *in vitro* the **prebiotic** activity of **Standardized herbal complex** against 12 strains of bacteria and 3 reference strains of fungi.

RESULTS

	MIC	SI
Lactobacillus plantarum	3.12%	3.12%
Streptococcus thermophilus	3.12%	3.12%
Bifidobacterium breve	3.12%	3.12%

Results of the in vitro antimicrobial test carried out on skin prebiotic bacteria.

	MIC	SI
Staphylococcus aureus	1.56%	0.78%
Corynebacterium xerosis	0.39%	0.20%
Micrococcus luteus	0.10%	0.10%
Parvimonas micra	0.39%	0.20%
Porphyromonas gingivalis	0.05%	0.01%
Veillonella parvula	0.39%	0.20%
Streptoccocus mutans	0.39%	0.10%
Propionibacterium acnes	0.39%	0.39%
Malassezia globosa	0.10%	0.02%
Malassezia furfur = P. ovale	0.20%	0.02%
Candida albicans	0.20%	0.02%
AVERAGE	**0.4%**	**0.02%**

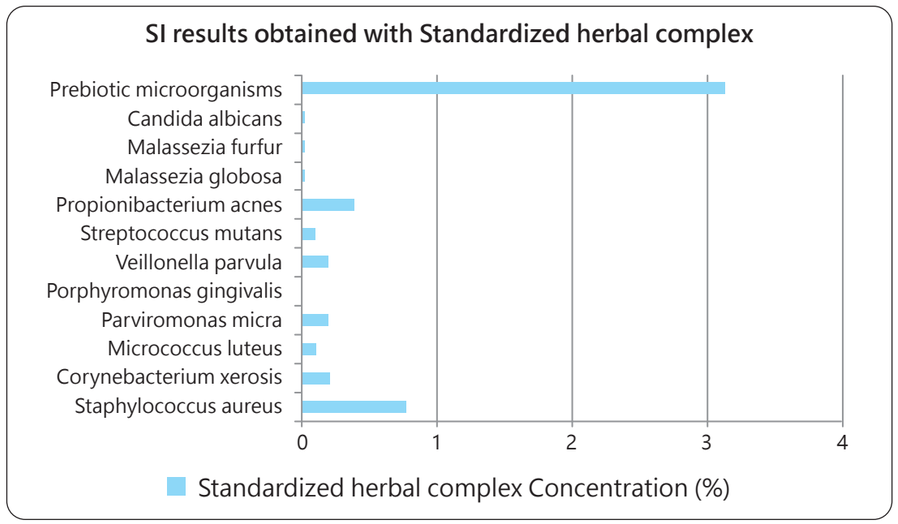
Results of the in vitro antimicrobial test carried out on unwanted microorganisms in the skin.

***minimum inhibitory concentration (MIC)** is the minimum concentration of substance to be tested that produces a total inhibition of the growth of the microorganism

****strong inhibition (SI)** is the concentration of substance to be tested that produces a considerable decrease in growth without causing total inhibition. This information is of great interest, because from a dermatological point of view, the aim is not a total inhibition by the active ingredient, but an inhibition that produces a decline in unwanted microbial population which is enough so that skin's own defense mechanisms can act.

IN VITRO EFFICACY

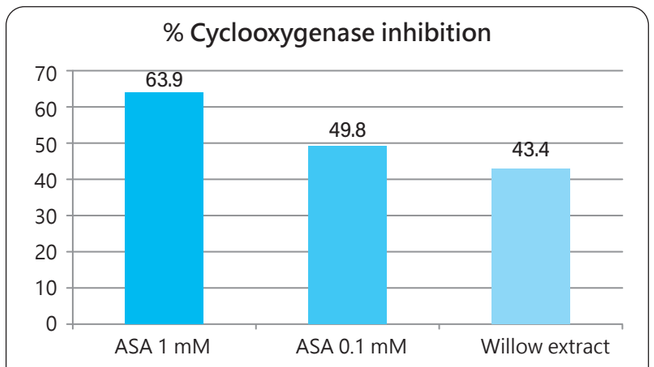
Results obtained by **Standardized herbal complex** show that both the SI and the MIC of unwanted organisms were much lower than those obtained for the studied prebiotic bacteria. This allows us to declare that **Standardized herbal complex** inhibits the growth of unwanted microorganisms without affecting beneficial bacteria for the skin.



ANTI-IRRITATING ACTIVITY

In order to evaluate the anti-irritant efficacy of the willow extract in **Standardized herbal complex**, the inhibition of cyclooxygenase (COX), enzyme that catalyzes the formation of inflammatory mediators from arachidonic acid, was measured.

The assay was performed on primary cultures of human keratinocytes by determining the content of prostaglandins (PGE2) using an immunoassay. The actual culture medium of keratinocytes was used as a negative control, and acetylsalicylic acid (AS) was tested at concentrations of 1 mM and 0.1 mM as a positive control.



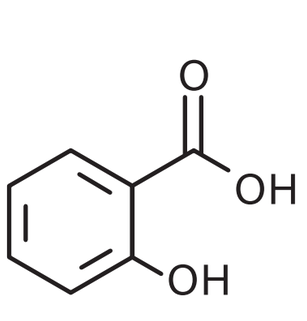
Results of the anti-irritant action of Willow Extract.

The values obtained in this assay and it can be seen that Willow Extract (0.1%) produces an important reduction in the amount of prostaglandin (PGE2), which signifies a marked inhibition of cyclooxygenase. This effect is comparable to those caused by acetylsalicylic acid (ASA) used as control in the assay (0.1 mM).

TERPINEN-4-OL + SALICYLIC + SALIY ALBA (WILLOW) BARK EXTRACT

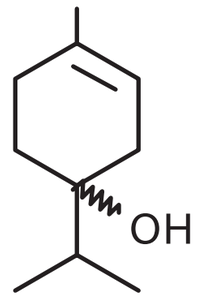
The results of this *in vitro* efficacy study lead to the following conclusions.

- **Standardized herbal complex** behaves as a prebiotic cosmetic active ingredient at concentrations of 0.2%, as it produces a marked decrease in growth (SI) of microorganisms involved in unwanted processes in the skin.
- **Standardized herbal complex** ensures the balance of normal skin flora.



Salicylic acid





Terpinen-4-ol

NO ODOR SPRAY

As the vaginal environment becomes progressively more alkaline, conditions become less favorable for the activity of Lactobacillus species. This shift reduces lactic acid production, thereby weakening one of the primary defense mechanisms that maintain the acidic vaginal pH. The decrease in acidity, along with diminished synthesis of hydrogen peroxide and bacteriocins, compromises the protective role of the normal microbiota.

This disruption establishes a self-perpetuating cycle: reduced Lactobacillus metabolism further increases alkalinity, which in turn favors the proliferation of saprophytic and potentially pathogenic microorganisms. Over time, this imbalance can facilitate the transition from commensal to pathogenic bacterial overgrowth, predisposing to conditions such as bacterial vaginosis.

"LACTIC ACID KEEPS ITS ACIDIC PH, THUS CREATING A VIRTUOUS CIRCLE THAT PREVENTS THE UNCONTROLLED GROWTH OF OTHER BACTERIA PRESENT IN THE VAGINA"

CHAMOMILE EXTRACT (CHAMOMILLA RECUTITA FLOWER EXTRACT)

- The active constituents of chamomile include the terpenoids (bisoprolol, matricine, levomenol, chamazulene), flavonoids (apigenin, luteolin, rutin, quercetin), hydroxycoumarins, mono- and oligosaccharides, and mucilages
- Chamomile is said to uplift moods, soothe inflammation and help heal the skin, and thus could help with feminine hygiene
- Chamazulene exhibits anti-inflammatory activity and promotes wound healing
- Levomenol is an anti-inflammatory and natural moisturizing agent
- Antioxidant properties



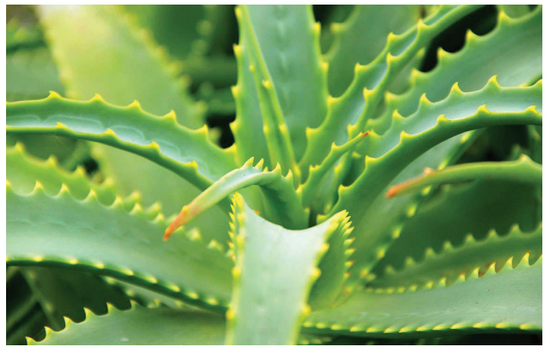
ALOE VERA EXTRACT

ALOE VERA CONTAINS

75 potentially active constituents: vitamins, enzymes, minerals, sugars, lignin, saponins, salicylic acids and amino acids

Mechanism of Action:

- Healing Properties
- Effects on skin exposure to UV and gamma radiation
- Anti-inflammatory action
- Laxative effect
- Moisturizing and anti-aging effect
- Antiseptic effect



HYDROLYZED MILK WASH

GEL LAVANT AU LAIT HYDROLYSÉ

What is in **Vagival Hydrolyzed Milk Wash?**

1. VAGINAL HEALTH AND SCIENTIFIC RATIONALE
2. KEY ACTIVE INGREDIENTS AND MECHANISMS
3. PRODUCT BENEFITS
4. SAFETY AND CLINICAL CONSIDERATIONS
5. CONCLUSION





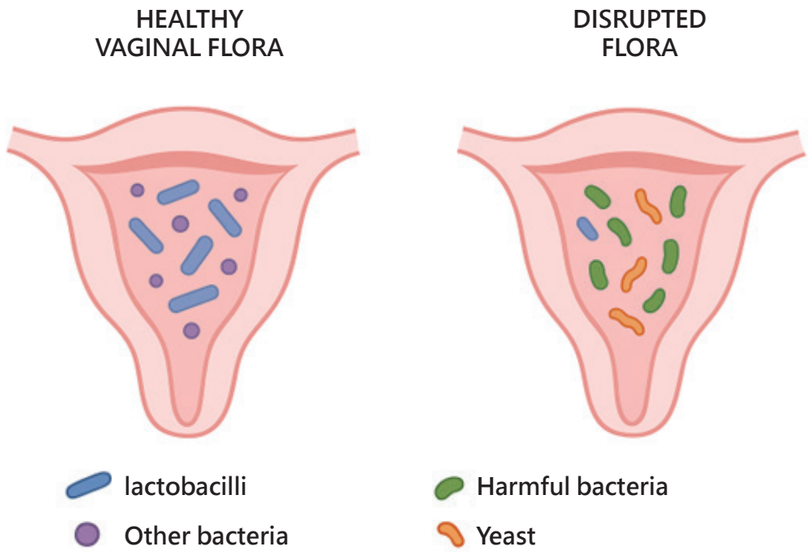
VAGIVAL HYDROLYZED MILK WASH

1. INTRODUCTION

VAGIVAL Hydrolyzed Milk Wash is a scientifically formulated intimate hygiene solution designed for external use. It supports the natural balance of the vulvovaginal environment by maintaining optimal pH, providing hydration, and offering antimicrobial and soothing benefits.

2. VAGINAL HEALTH AND SCIENTIFIC RATIONALE

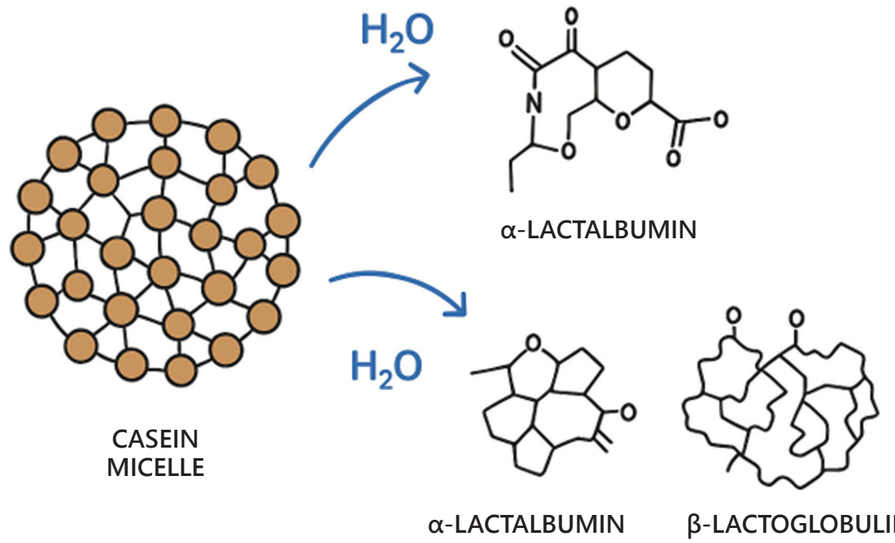
- **Vaginal Microbiota:** Healthy vaginal flora is dominated by Lactobacillus species which produce lactic acid, hydrogen peroxide, and bacteriocins, protecting against pathogenic bacteria.
- **pH Balance:** Normal vaginal pH is acidic (3.8–4.5). Disruption of pH can promote over-growth of opportunistic or pathogenic bacteria.
- **Importance of Gentle Cleansing:** Harsh soaps or detergents can disrupt the microbiota, alter pH, and cause irritation.



3. KEY ACTIVE INGREDIENTS AND MECHANISMS

3.1 HYDROLYZED MILK PROTEINS

- Provide peptides and amino acids that nourish epithelial cells.
- Promote hydration and barrier protection.



3.2 SALVIA OFFICINALIS (SAGE) LEAF EXTRACT IS A BIOACTIVE BOTANICAL DERIVED FROM THE LEAVES OF THE SAGE PLANT, CONTAINING PHENOLIC ACIDS, FLAVONOIDS, AND ESSENTIAL OILS. IN FORMULATIONS FOR THE VULVAR AND VAGINAL AREA, SAGE EXTRACT PROVIDES SEVERAL BENEFICIAL EFFECTS:

- Antimicrobial activity: In vitro studies indicate that sage leaf extract can inhibit the growth of various bacteria and fungi, helping to support a balanced vaginal microbiome and reduce the risk of dysbiosis. Its phenolic compounds act by disrupting microbial cell walls and interfering with enzymatic pathways.
- Antioxidant activity: The polyphenols in sage extract scavenge reactive oxygen species (ROS), reducing oxidative stress and protecting delicate mucosal tissues from damage caused by free radicals. This supports tissue health and resilience in sensitive areas.
- Astringent and anti-inflammatory effects: Sage extract has mild astringent properties that can help tone and soothe vulvar tissue. Its anti-inflammatory effects, mediated through the modulation of pro-inflammatory enzymes and cytokines, help calm irrita-tion, redness, or discomfort, making it suitable for sensitive mucosal surfaces.

3.3 CHAMOMILLA RECUTITA (CHAMOMILE) FLOWER EXTRACT

Chamomilla recutita (Chamomile) Flower Extract is derived from the dried flowers of the chamomile plant and is rich in bioactive compounds such as flavonoids (e.g., apigenin), terpenoids, and phenolic acids. These constituents contribute to its well-documented dermatological and mucosal benefits, particularly in sensitive areas such as the vulvar and vaginal region.

- **Anti-inflammatory activity:** Chamomile extract modulates inflammatory pathways by inhibiting pro-inflammatory enzymes (e.g., COX-2) and cytokines, which helps reduce tissue irritation and discomfort. This effect makes it especially suitable for soothing sensitive mucosal tissues.
- **Soothing and calming effects:** The flavonoids and terpenoids in chamomile provide a calming effect on the skin and mucosa, helping to reduce redness, irritation, and sensations of discomfort. This supports overall mucosal comfort and contributes to maintaining a healthy microenvironment.
- **Protective and restorative properties:** Chamomile extract also exhibits mild antioxidant activity, neutralizing reactive oxygen species and supporting the natural defense mechanisms of delicate tissues. Its combined soothing, anti-inflammatory, and protective actions make it a valuable ingredient in formulations designed for intimate care.

Conclusion: When incorporated into vulvovaginal formulations, Chamomilla recutita flower extract helps reduce redness and irritation, provides anti-inflammatory benefits, and promotes a soothing and comfortable effect on sensitive mucosal tissues.

3.4 PANTHENOL (PROVITAMIN B5)

Panthenol (Provitamin B5) is a water-soluble vitamin derivative that is widely used in dermatological and mucosal formulations for its multifunctional properties. Upon topical application, panthenol is converted into pantothenic acid, an essential component of coenzyme A, which plays a critical role in cellular metabolism and tissue repair.

- **Enhancement of barrier function:** Panthenol contributes to the maintenance and restoration of the epithelial barrier by supporting the synthesis of lipids and proteins in the stratum corneum and mucosal layers. This helps protect delicate vulvovaginal tissues from external irritants and microbial imbalance.
- **Hydration and moisture retention:** Panthenol acts as a humectant, attracting and binding water within the skin and mucosal tissues. This property helps maintain optimal hydration levels, preventing dryness and promoting comfort in sensitive areas.
- **Support of epithelial repair and regeneration:** By stimulating fibroblast proliferation and keratinocyte differentiation, panthenol accelerates tissue repair and enhances resilience, making it particularly valuable for soothing minor irritation, microabrasions, or compromised mucosal surfaces.

Conclusion: Panthenol is an effective and well-tolerated ingredient for intimate care, offering barrier support, hydration, and promotion of epithelial repair, thereby contributing to the comfort and health of vulvovaginal tissues.

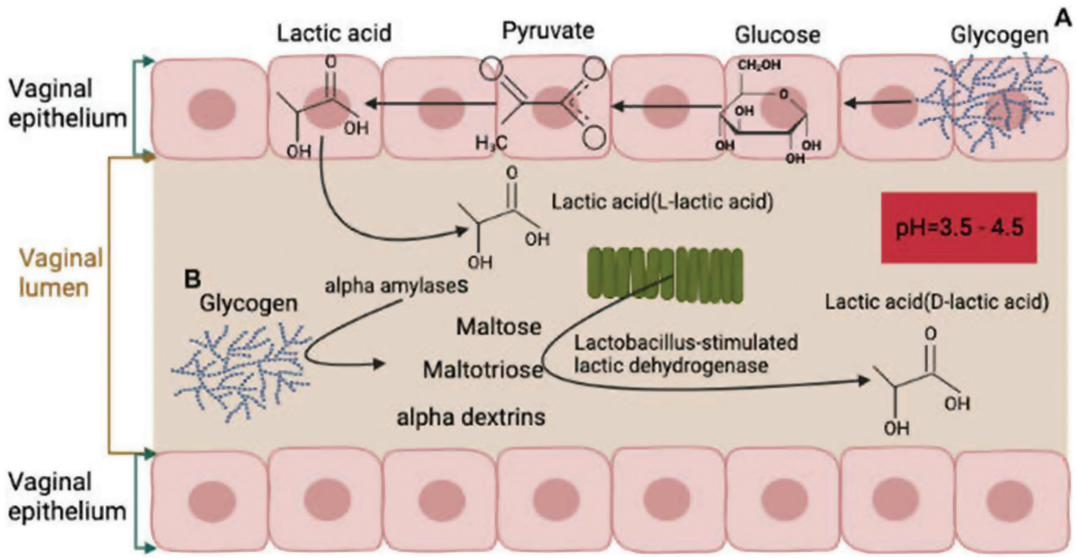
ALL ABOUT V
VAGIVAL HYDROLYZED MILK WASH
VAGIVAL

3.5 ALLANTOIN IS A NATURALLY OCCURRING COMPOUND FOUND IN SEVERAL PLANTS AND IS WIDELY RECOGNIZED FOR ITS DERMATOLOGICAL AND MUCOSAL BENEFITS. IT IS A STABLE, WATER-SOLUBLE INGREDIENT FREQUENTLY USED IN FORMULATIONS FOR SENSITIVE AND DELICATE TISSUES, SUCH AS THE VULVAR AND VAGINAL AREA.

- **Promotion of tissue repair and wound healing:** Allantoin stimulates cell proliferation and epithelial tissue regeneration, supporting the repair of minor microabrasions or irritated mucosal surfaces. This makes it particularly valuable for maintaining the integrity of sensitive areas.
- **Soothing and protective effects:** Allantoin exhibits keratolytic and anti-irritant properties, helping to calm inflammation, reduce redness, and protect delicate skin and mucosa from further irritation.
- **Moisturization and comfort:** By supporting the retention of water in the tissue and promoting softening of the mucosal surface, allantoin helps maintain hydration and enhances overall comfort in intimate care applications.

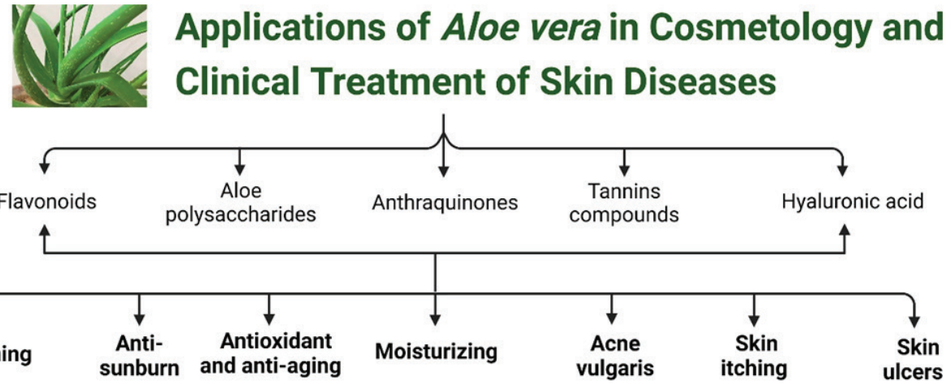
3.6 LACTIC ACID

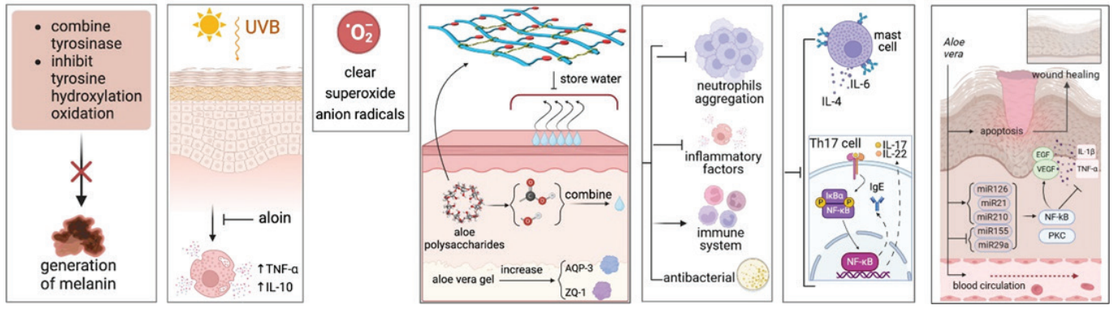
Vaginal lactic acid, key to vaginal homeostasis, is produced by two sources: the vaginal epithelium and the vaginal microbiota. A, The epithelium produces lactic acid through the conversion of glycogen to glucose, then to pyruvate, and finally to lactic acid, which is released into the vaginal lumen as the epithelium undergoes desquamation. This process is controlled by estrogen levels in the blood, and subject to change throughout a woman's life cycle. B, The second main source of lactic acid is from the conversion of glycogen found in the vaginal lumen by alpha amylases, to maltose, maltotriose, and alpha dextrins, then to lactic acid through the action of Lactobacillusstimulated lactic dehydrogenase.



3.7 ALOE BARBADENSIS (ALOE VERA) LEAF JUICE

Aloe Vera is a succulent plant native to arid, hot climates. The leaf-derived juice has been extensively studied for its bioactive properties. Its composition includes polysaccharides, enzymes, amino acids, antioxidants, vitamins, and minerals, which collectively contribute to maintaining tissue hydration, supporting barrier function, and promoting skin homeostasis. In formulations for delicate areas such as the vulvar region, Aloe Vera has been shown to provide moisturization, soothe irritation, and enhance skin elasticity and resilience, while maintaining a gentle profile suitable for sensitive skin.





VAGIVAL HYDROLYZED MILK WASH

- Maintains physiological pH balance.
- Supports healthy vaginal microbiota.
- Provides hydration and skin barrier protection.
- Soothes irritation and redness.
- Promotes confidence and comfort in daily hygiene.

SAFETY AND CLINICAL CONSIDERATIONS

- Designed for external intimate use.
- Alcohol-free to minimize dryness or irritation.
- pH-balanced formulation compatible with healthy vaginal flora.
- Suitable for daily use.

CONCLUSION

VAGIVAL Hydrolyzed Milk Wash is a scientifically supported intimate hygiene product that combines natural extracts, hydrating agents, and pH regulators to maintain vaginal health, prevent discomfort, and support daily confidence.

LACTIC ACID WASH

GEL LAVANT A L'ACIDE LACTIQUE

What is in **VAGIVAL Lactic Acid Wash?**

1. pH-Balanced Intimate Hygiene
2. Vaginal Health
3. Vaginal Barrier Function
4. Lactic Acid
5. Mechanisms: Synergy & Outcomes





VAGIVAL LACTIC ACID WASH

1. INTRODUCTION: PH-BALANCED INTIMATE HYGIENE

- Designed for vulvovaginal health.
- Maintains physiological pH balance.
- Supports microbiome and tissue hydration.

VAGINAL HEALTH

UNDERSTANDING THE VULVOVAGINAL ECOSYSTEM

IMPORTANCE OF LACTOBACILLUS

Lactobacillus spp. play a crucial role in maintaining a healthy vaginal environment by producing lactic acid, which helps suppress pathogens and supports pH stability.

ROLE OF LACTIC ACID

Lactic acid serves as a natural pH regulator, promoting beneficial bacteria growth while inhibiting harmful pathogens, ultimately enhancing the vulvovaginal health and epithelial resilience.

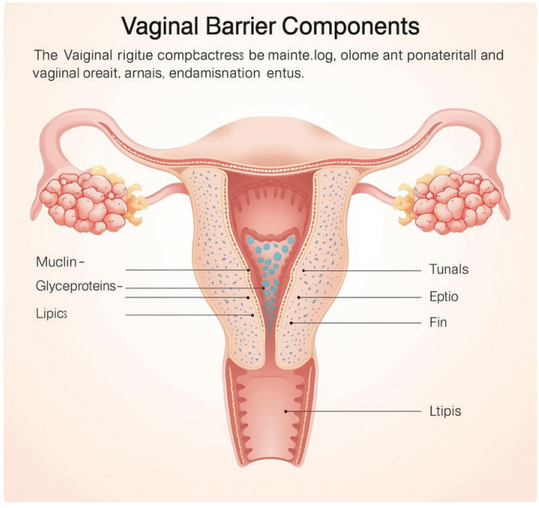
UNDERSTANDING THE CRITICAL VAGINAL PH RANGE

- Lactobacillus spp. dominance is vital.
- pH deviations increase infection risks.
- Barrier function components support health.

VAGINAL BARRIER FUNCTION

Understanding components vital for vaginal health



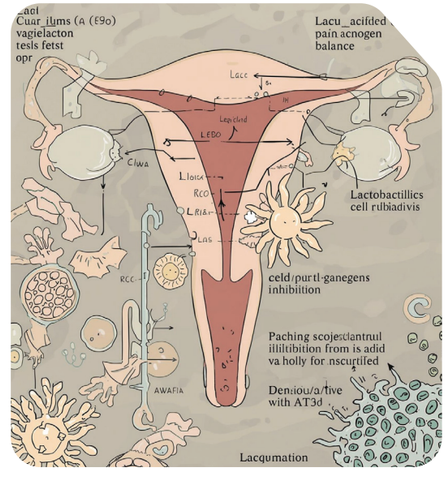


ACTIVE INGREDIENT: LACTIC ACID'S ROLE IN HEALTH

- Natural pH regulator for balance
- Supports Lactobacillus growth effectively
- Inhibits harmful pathogen growth

LACTIC ACID

- Natural pH regulator maintaining optimal acidity (4.0–4.5).
- Supports Lactobacillus growth, enhancing microbiome stability.
- Inhibits pathogens like Gardnerella vaginalis and Candida albicans.
- Promotes controlled desquamation to reduce pathogen adhesion.

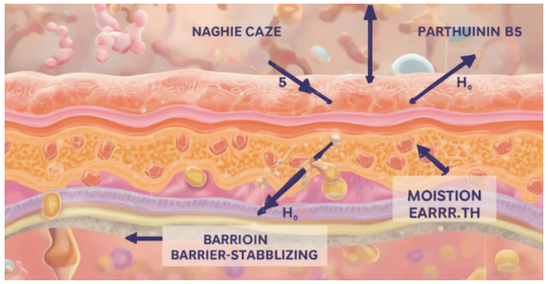


ACTIVE INGREDIENTS FOR VAGINAL HEALTH



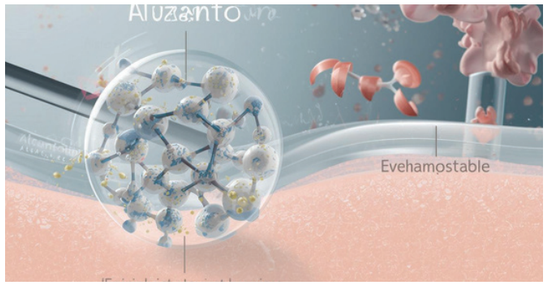
ALOE VERA

Hydration and anti-inflammatory benefits



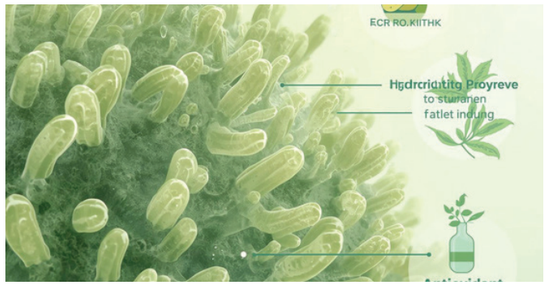
PANTHENOL

Moisturizes and stabilizes the barrier



ALLANTOIN

Promotes epithelial repair and reduces irritation



GREEN ALGAE

Hydrating biofilm and antioxidant defense

SILYBUM MARIANUM: BENEFITS FOR VAGINAL HEALTH



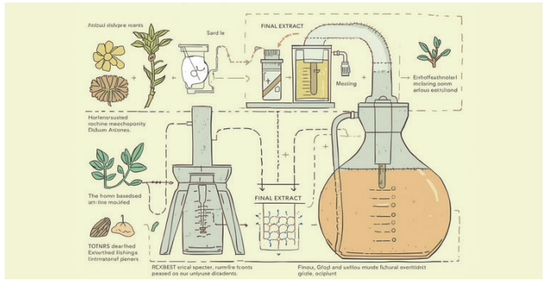


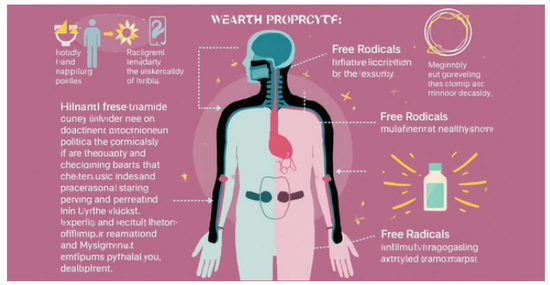
ANTIOXIDANT

Reduces oxidative stress and inflammation

ANTI-INFLAMMATORY

Decreases pro-inflammatory cytokines' activity





PROTECTIVE

Inhibits lipid peroxidation and cellular damage

HEALING

Supports tissue repair and resilience

MECHANISMS

SYNERGY

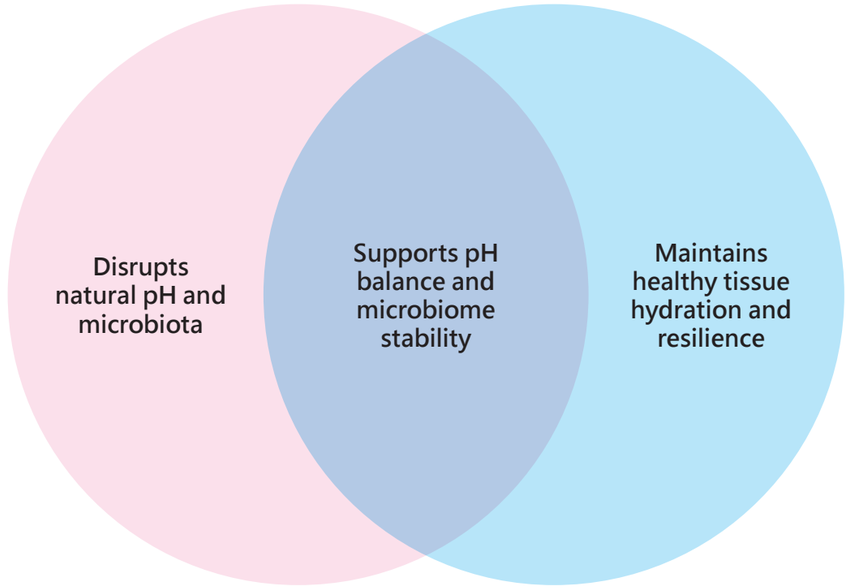
Combined ingredients maintain pH and microbiome stability, enhancing overall vaginal health.

OUTCOMES

Expected results include reduced irritation, improved resilience, and accelerated healing in tissue.

COMPARISON OF CLEANSERS

Understanding the differences between conventional cleansers and VAGIVAL Lactic Acid Wash is essential for promoting optimal vulvovaginal health and maintaining a balanced microbiome.



CONCLUSION

SCIENTIFIC FORMULATION

- Tailored pH
- Microbiome support

GENTLE CLEANSING

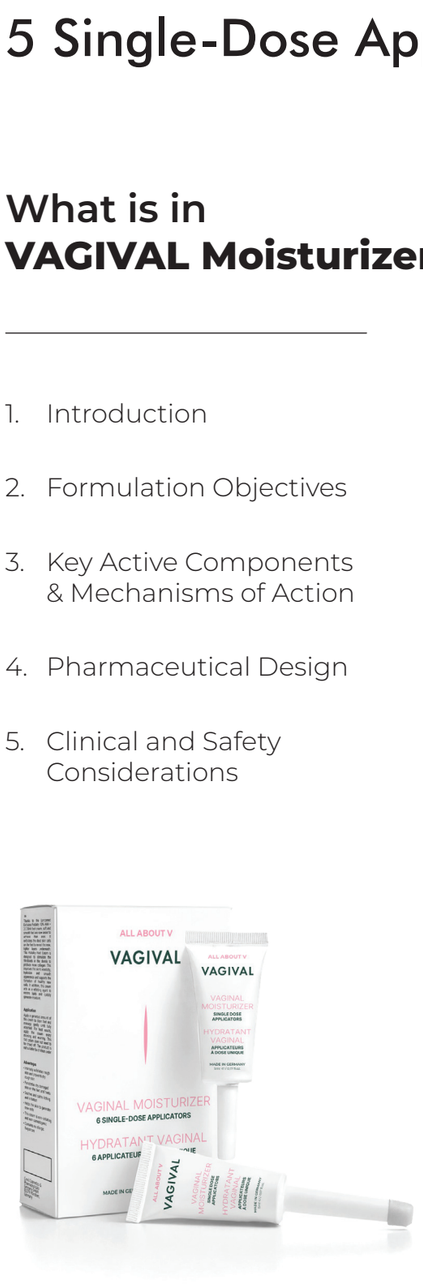
- Long-term health
- Daily comfort

MOISTURIZER

5 Single-Dose Applicators

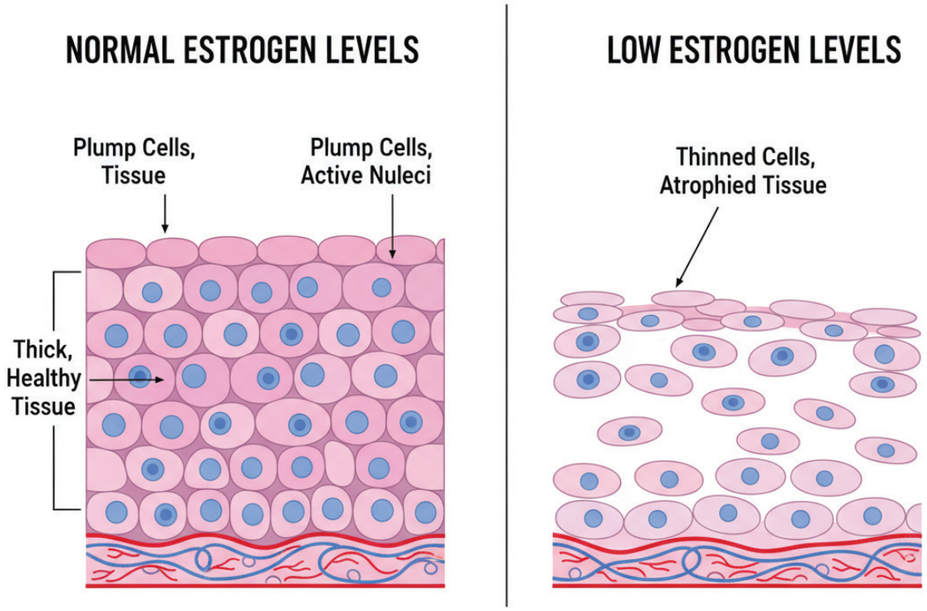
What is in **VAGIVAL Moisturizer?**

1. Introduction
2. Formulation Objectives
3. Key Active Components & Mechanisms of Action
4. Pharmaceutical Design
5. Clinical and Safety Considerations





INTRODUCTION



Vaginal dryness is a common condition affecting women across all age groups, particularly during menopause, postpartum, or after hormonal changes. It results from decreased estrogen levels, leading to epithelial thinning, reduced mucosal secretions, and disrupted pH homeostasis.

VAGIVAL Moisturizer is a scientifically formulated, non-hormonal, hydrating therapy designed to restore vaginal comfort, maintain mucosal integrity, and support the natural ecosystem of the vaginal microbiome.

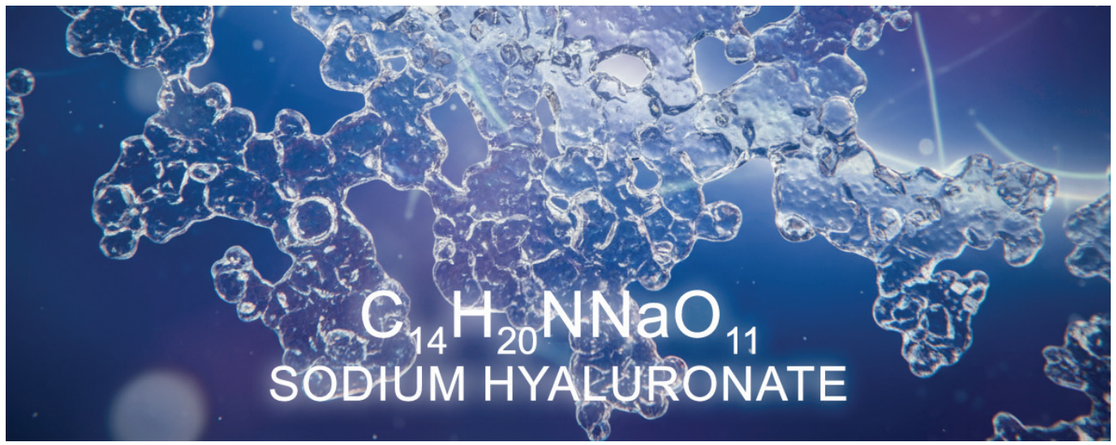
FORMULATION OBJECTIVES

THE FORMULATION AIMS TO:

- Rehydrate and restore mucosal elasticity
- Soothe irritation and reduce inflammation
- Maintain the physiological pH (3.8–4.5)
- Promote epithelial regeneration and resilience
- Deliver controlled, hygienic single-dose application

KEY ACTIVE COMPONENTS & MECHANISMS OF ACTION

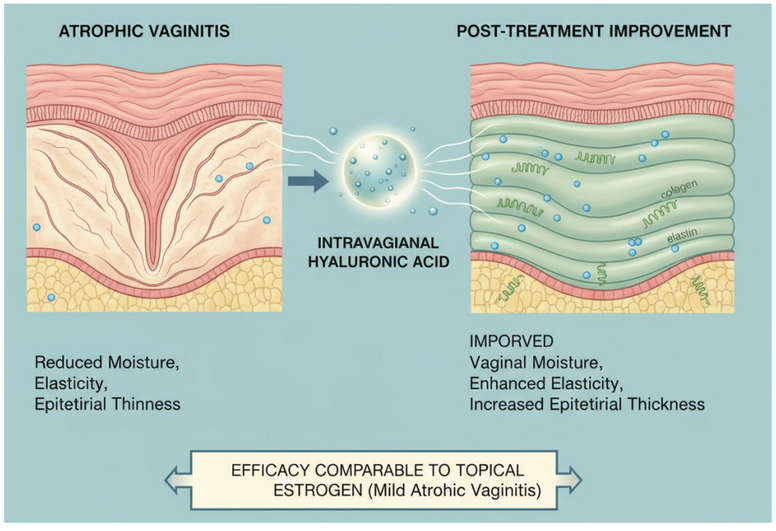
1. SODIUM HYALURONATE (HYALURONIC ACID)



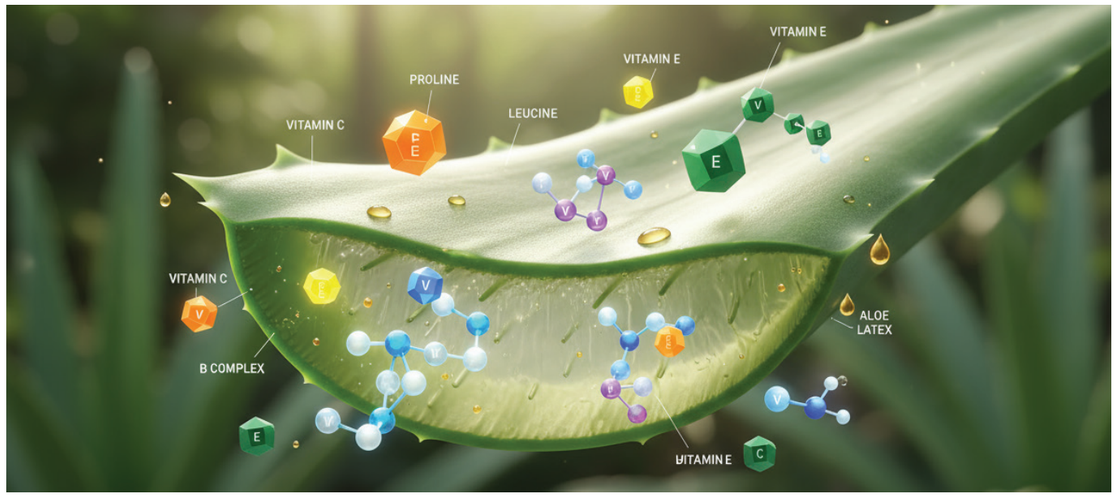
- **Mechanism:** Sodium Hyaluronate is a high-molecular-weight polysaccharide with exceptional hygroscopic properties, capable of binding up to 1,000 times its weight in water.
- **Action:**
  - Enhances mucosal hydration through water retention.
  - Promotes epithelial regeneration by supporting fibroblast proliferation.
  - Creates a protective film that reduces transepithelial water loss (TEWL).

CLINICAL EVIDENCE:

Studies demonstrate that intravaginal hyaluronic acid improves vaginal moisture, elasticity, and epithelial thickness, offering efficacy comparable to topical estrogen in mild atrophic vaginitis.



2. ALOE BARBADENSIS LEAF JUICE (ALOE VERA)



- **Mechanism:** Rich in polysaccharides, vitamins, and amino acids.
- **Action:**
  - Provides immediate soothing and anti-inflammatory effects.
  - Promotes collagen synthesis and mucosal repair.
  - Enhances hydration synergy with hyaluronic acid.

3. CHAMOMILLA RECUTITA (CHAMOMILE) FLOWER EXTRACT

- **Mechanism:** Contains bisabolol and flavonoids with potent anti-inflammatory and antioxidant properties.
- **Action:**
  - Calms irritation and redness.
  - Reduces local cytokine-mediated inflammation (IL-1β, TNF-α).
  - Contributes to epithelial recovery and comfort



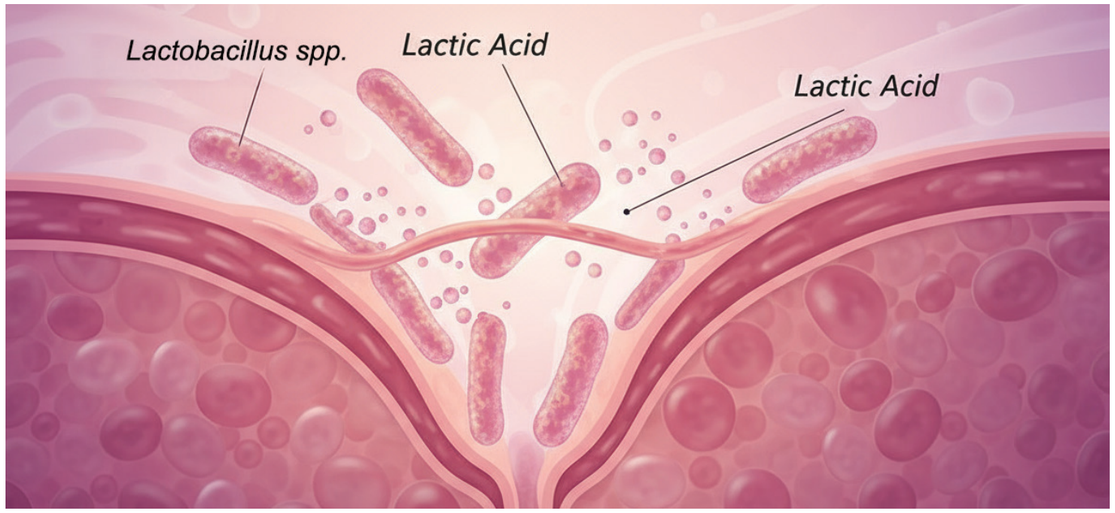
4. BOTANICAL NOURISHING COMPLEX

Component	Primary Function
Oryza Sativa (Rice) Extract	Rich in amino acids and polysaccharides that support tissue regeneration and barrier reinforcement.
Glycine Max (Soy) Seed Extract	Source of phytoestrogens (isoflavones) that mimic estrogenic activity at mucosal receptors, supporting epithelial integrity.
Daucus Carota Sativa (Carrot) Root Extract	Provides carotenoids and antioxidants, enhancing epithelial resilience.
Chenopodium Quinoa Seed Extract	Offers peptides and minerals aiding in hydration and cellular recovery.
Panax Ginseng Root Extract	Stimulates microcirculation and collagen synthesis, enhancing mucosal vitality.

SYNERGISTIC EFFECT:

This botanical matrix delivers essential phytonutrients that protect and restore the mucosa, promoting long-term tissue health and comfort.

5. LACTIC ACID



- **Mechanism:** A natural metabolite produced by Lactobacillus spp. in the vaginal flora.
- **Action:**
  - Helps maintain an acidic pH (3.8–4.5) conducive to healthy microbiota.
  - Inhibits pathogenic bacterial growth (e.g., Gardnerella vaginalis).
  - Promotes optimal epithelial enzyme activity.

PHARMACEUTICAL DESIGN

SINGLE-DOSE APPLICATOR SYSTEM

- **Hygienic:** Sterile, prefilled units eliminate contamination risk.
- **Controlled Dosing:** Each applicator provides a precise, therapeutically optimized amount.
- **User-Friendly:** Ergonomic design ensures ease of insertion and comfort.



CLINICAL AND SAFETY CONSIDERATIONS



- **Non-Hormonal:** Suitable for users contraindicated for estrogen therapy.
- **Hypoallergenic:** Free from parabens, synthetic fragrances, and irritants.

POTENTIAL APPLICATIONS:

- Menopausal and perimenopausal vaginal dryness
- Postpartum or post-surgical mucosal recovery
- Adjunct in vaginal atrophy therapy
- Support during antibiotic or contraceptive use disrupting flora balance

SUMMARY



VAGIVAL Moisturizer represents a modern, evidence-based solution for vaginal comfort and hydration.

By combining **biomimetic hydration (Hyaluronic Acid), soothing botanicals (Aloe, Chamomile),** and **pH-balancing support (Lactic Acid),** it ensures **comprehensive mucosal care** – restoring physiological balance, comfort, and confidence.

TIGHTENING

5 Single-Dose Applicators

What is in **VAGIVAL Tightening?**

1. Introduction
2. Sodium hyaluronate (HA) – chemistry & mechanism
3. Lactic acid – chemistry & mechanism
4. Soluble collagen – chemistry & mechanism



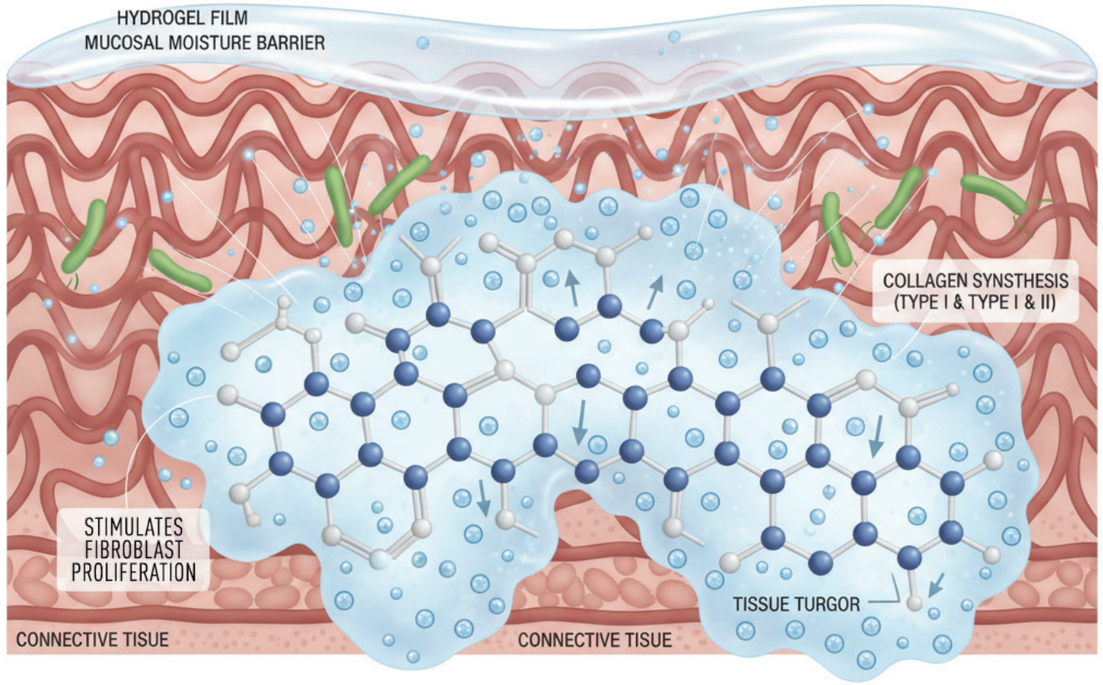
VAGIVAL TIGHTENING

This **VAGINAL TIGHTENING** gel is expertly formulated to enhance the firmness and elasticity of the vaginal walls, providing a rejuvenating effect that promotes a renewed sense of tightness and confidence. It's particularly beneficial for women experiencing changes due to aging, hormonal fluctuations, or the effects of childbirth, helping to restore a more youthful feel.

In addition to tightening, this gel supports overall vaginal health and comfort, making intimate moments more enjoyable. Its unique blend of ingredients works to improve tone and elasticity, allowing for a more satisfying intimate experience.



SODIUM HYALURONATE (HA) – CHEMISTRY & MECHANISM



WHAT IT IS:

- The sodium salt of hyaluronic acid – a high-molecular-weight linear glycosaminoglycan made of repeating disaccharides (D-glucuronic acid and N-acetyl-D-glucosamine).

MECHANISMS RELEVANT TO VAGINAL USE:

- **Hydration / viscoelastic matrix:** HA binds large amounts of water, forming a viscoelastic gel that increases lubrication and mucosal hydration.
- **Barrier & wound support:** It participates in tissue repair signalling, modulates inflammation, and supports re-epithelialization in mucosal tissues.

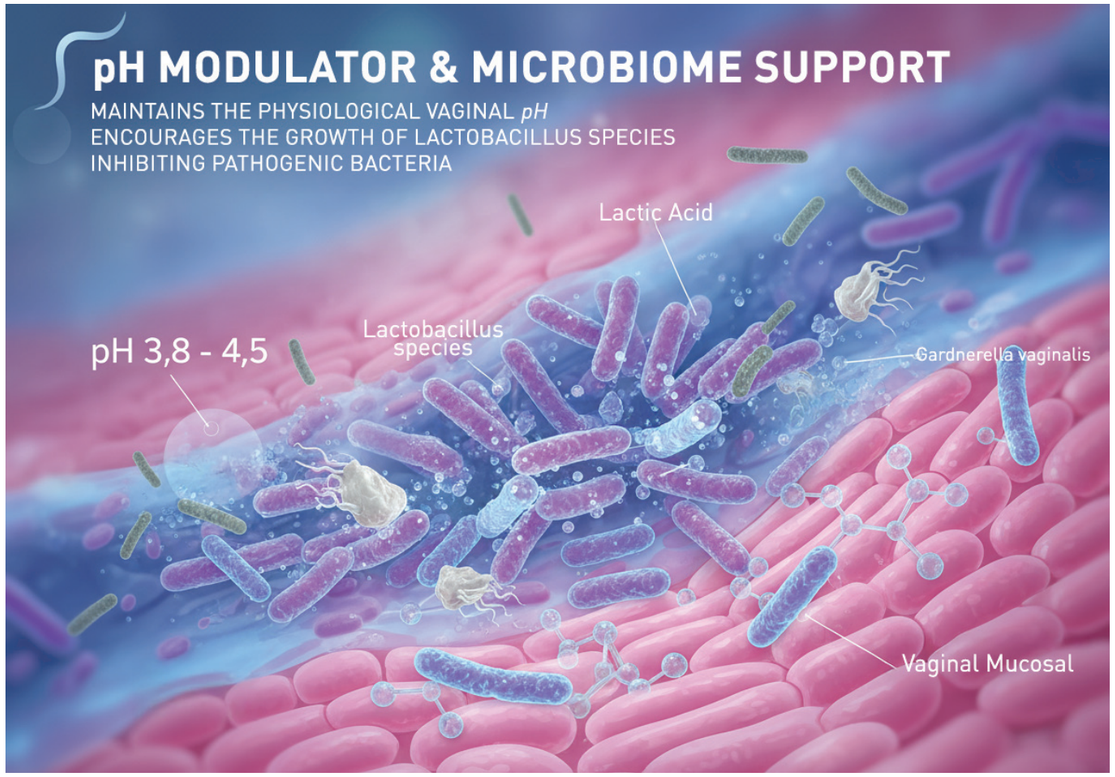
CLINICAL EVIDENCE:

Systematic reviews and clinical studies report HA-containing vaginal preparations improve symptoms of vaginal dryness, dyspareunia and signs of atrophy; they are often used as a non-hormonal alternative for women contraindicated for estrogen.

FORMULATION NOTES:

typical topical/washable gels use pharmaceutical grade sodium hyaluronate at **0.1–0.5%** for lubrication; thicker/moisturizing gels may use **0.5–1.5%** (higher yields greater viscosity and residence time but needs rheology control). Use molecular-weight selection to tailor hydration vs. penetration (low MW penetrates more; high MW gives surface film).

LACTIC ACID – CHEMISTRY & MECHANISM



WHAT IT IS:

Alpha-hydroxy acid (2-hydroxypropanoic acid) naturally produced by vaginal lactobacilli; pivotal for maintaining vaginal pH ~3.8–4.5.

MECHANISMS RELEVANT TO VAGINAL USE:

- **Acidification:** Restores/maintains a low pH that favors Lactobacillus species and limits growth of BV-associated bacteria.
- **Immunomodulation:** Lactic acid has reported anti-inflammatory effects and can influence epithelial barrier and innate immunity.

EVIDENCE & CAVEATS:

Clinical and pilot studies on lactic-acid gels show reductions in pH and Nugent scores and symptomatic improvement in some cohorts; however, formulation excipients and concentration determine cytotoxicity/tolerability, so choose vehicle carefully and test clinically.

FORMULATION NOTES:

working concentrations in marketed products/gels commonly range **~1–5% lactic acid** (often as a buffered system to target final pH ~4). pH must be controlled: too acidic → irritation; too alkaline → ineffective. Buffer with compatible salts (e.g., sodium lactate) and validate mucosal tolerability in vitro (vaginal epithelial cell lines) and in human studies.

SOLUBLE COLLAGEN – CHEMISTRY & MECHANISM

WHAT IT IS:

Soluble fragments or hydrolyzates of collagen (type I/III predominant in many tissues). These are high-MW peptides/proteins that can form films and provide humectant/occlusive effects.

MECHANISMS RELEVANT TO VAGINAL USE:

- **Film-forming & hydration:** Helps retain moisture on mucosal surface and can increase perceived firmness by creating a thin film.
- **Indirect support to connective tissue:** There is evidence that vaginal aging involves collagen remodelling (type ratio changes). Topical collagen may support matrix environment but penetration into deeper stromal layers where structural collagen resides is limited.

EVIDENCE:

Direct clinical evidence that topical soluble collagen causes substantive mechanical "tightening" of vaginal walls is lacking.

