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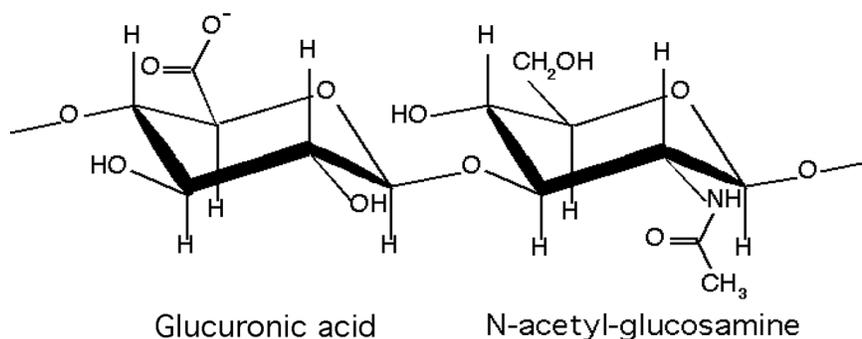
Weekdays 9am to 5pm EST

For general information, visit us at Vagisil.com

Vagisil Internal Lubricant & Moisturizing Gel

Vagisil Prohydrate® Internal Lubricant and Moisturizing Gel contains Hyaluronic acid (HA) along with other water-loving (Hydrophilic) ingredients, such as Glycerin and Propanediol, that provide instant and time-released moisture, lubrication when needed, and comfort for any activity with less mess and convenience. It also contains a bio-adhesive polymer that lines the inside of the vagina and keeps the Gel in contact with the vaginal walls longer to deliver moisture over time.

Hyaluronic Acid is a naturally occurring substance found throughout our bodies and is present in almost every cell in our bodies.¹ Hyaluronic acid is a carbohydrate, specifically, a polysaccharide (a long chain of sugars), a subset of which are glycosaminoglycans (GAG's) because one of the sugars is modified with an amino group (-NH₂). The structure of the repeating polymer chain is below.



Hyaluronic acid binds to water giving it a stiff gelatinous quality similar to “Jello”. This thick gelatinous material supports many functions in the body, in our joints and muscles for lubrication and impact buffering, in our eyes as shock absorbers and delivering on nutrients, giving softness and plump to lips, and especially the skin. HA is one of the most hydrophilic (water-loving) molecules in nature with numerous benefits for the human body and is such a critical part of the

skin it has been described as "nature's moisturizer".¹ In fact, HA is part of the skin's Natural Moisturizing Factor (NMF) which is essential for youthful and healthy skin.

Although Hyaluronic Acid (HA) can be found naturally in most every cell in the body, it is found in the greatest concentrations in the skin tissue, which also includes the vaginal skin tissue². Almost 50% of the body's HA is found in the skin.³ The major function of HA in skin is to maintain hydration and proper homeostasis of moisture. The skin has two layers, the epidermis (outer layer) which gives rise to the protective shield of the body and the other, the dermal layer (deep layer) which makes up the bulk of the skin. This dermal layer is composed of connective tissue and the connective tissue, with its gelatinous fluid like characteristics provides support, nourishes and hydrates the deep layers of the skin. The large amounts of HA in the skin provides continuous moisture by binding up to 1000 times its weight of water⁴ and results in youthful and healthy skin that is smooth and elastic. The ability of the skin to produce HA decreases with age⁵, so it is important to replenish this important ingredient, especially in the vagina where skin needs to remain moist, flexible, and elastic for a healthy lifestyle.

Vagisil Prohydrate™ Internal Lubricant and Moisturizing Gel also contains carbomers, a water-loving (hydrophilic), bioadhesive ingredient that 'sticks' to the vaginal mucosal membrane and delivers prolonged moisturization directly to the mucous membrane and the vaginal epithelium cells. The bio-adherent polymer is a high molecular weight polymer that readily 'swells' in water up to 1000 times their original volume in water forming a gel⁶, providing a large adhesive surface for maximum contact with the mucous membrane. This prolonged contact allows the water to flow from the gel to the mucous membrane and the vaginal epithelium cells.

The bio-adhesive polymer 'sticks' to the vaginal walls by hydrogen bonding between the mucous membrane, which is predominantly made of cross linked glycoproteins, and the carboxylic groups in the bio-adhesive polymer. The degree and strength of hydrogen bonding between the bio-adhesive polymer and the mucosal membrane is highly dependent on pH. The polymer will adhere better at acidic pH levels (Internal vaginal pH is between 3.5 and 5.0^{7,8}) where the

¹ J. Necas, et. al., Hyaluronic acid (hyaluronan): a review, *Veterinarni Medicina*, 53, 208 (8): 397-411.

² G. Kogan, et. al., "Hyaluronic Acid: A Biopolymer with Versatile Physico-Chemical and Biological Properties", *Handbook of Polymer Research*, Chapter 31, Nova Science Publishers, Inc., 2007.

³ Laurent T.C., Fraser J.R., Hyaluronan, *FASAB J.*, 1992;2397-2402:6.

⁴ Cowman M.K. and Matsuoka S., "Experimental Approaches to Hyaluronan Structure", *Carbohydr. Res.*, 2005, Apr 11;340(5):791-809.

⁵ Ilaria Ghersetich M.D., et. al., "Hyaluronic Acid in Cutaneous Intrinsic Aging", *International Journal of Dermatology*, Volume 33, Issue 2, 119-122, Feb 1994.

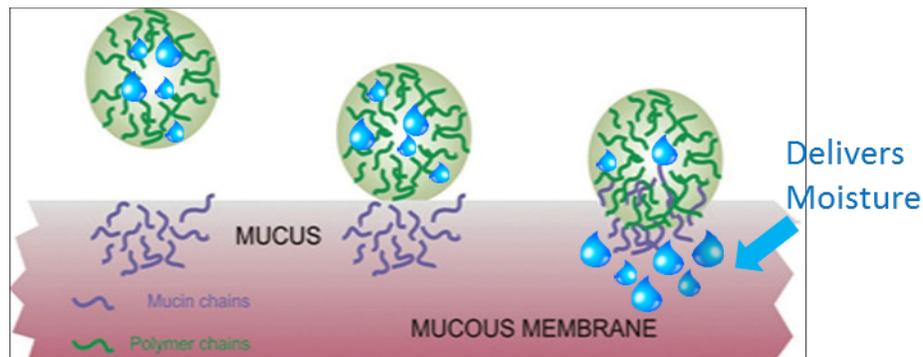
⁶ Lubrizol, *Pharmaceutical Bulletin* 23, Edition may 31, 2011.

⁷ Genazzani, A.D et al (2003) Postmenopausal Vaginal Atrophy: Non-hormonal therapy with a moisturising bioadhesive vaginal gel.

⁸ Elizabeth G. Stewart M.D. and Paula Spencer, *The V Book – A Doctor's Guide to Complete Vulvovaginal Health*.

carboxylic groups in the polymer are readily available. At low pH (5.0 or less) the carboxylic acid groups on the polymer are attracted to the glycoproteins of the mucosal membrane and results in hydrogen bonding to both polysaccharide chains and glycoproteins in the mucosal membrane. Vagisil Prohydrate™ Internal Lubricant and Moisturizing Gel is formulated to a pH that is between 4.5 and 5.0 to ensure maximum adhesion to the mucosal membrane and maintain the internal pH balance.

Bio-adhesion to Mucous Membranes⁹.



Vagisil Prohydrate™ Internal Lubricant and Moisturizing Gel is safe to use as directed and has been cleared by the Food and Drug Administration (FDA) in the United States and received a CE Mark from the British Standards Institute (BSI) in Europe.

⁹ Lohani A, Chaudhary GP, Mucoadhesive microspheres: A novel approach to increase gastroretention., Chron. Young Sci. 2012;3:121-8.