



**‘Exploring Microvesicle Technology’: Tiny structures lead to advances in dermatologic therapy;**  
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Submitted by:  
**Virginia Quelch, DVM**  
**St. John’s Veterinary Hospital**  
**St. Augustine, Florida**

**The Human-Animal Connection**

Loss of water to the air results in dehydrated, scaling and sometimes pruritic skin, which affects thousands of dogs and cats each year and presents an ongoing battle for veterinarians and pet owners, particularly in winter. However, new technological breakthroughs are helping manufacturers to create more effective antipruritic products than ever before, available in a variety of formulations.

Sustained-release technology is one such breakthrough that uses Novasome® microvesicles - a liposome based technology created from surfactant systems rather than phospholipids - to encapsulate moisture within skin treatments, shampoos and sprays to achieve a hydrating effect. These Novasome® microvesicles carry both water-based as well as lipid-based compounds and are proven to be a very effective hydrator.

Sustained-release technology became widespread in human dermatologicals due to Novasome® microvesicles being well-suited for delivery of beneficial ingredients to the skin. Research showed that microvesicles with water in their "cargo holds" outperform the most sophisticated emulsion systems. These naturally occurring acids help dissolve the cellular cement that binds dead, superficial epithelial cells together and provides for skin exfoliation. Human cosmetic companies have microencapsulated these products to provide immediate release of the water-soluble ingredients, continuous release across a semipermeable membrane and delayed release through vesicle breakdown upon topical application to create hydration.

Recent advances in veterinary topical agents have followed the human field and Novasome®-based, sustained release veterinary products are now available to pets for long-lasting skin hydration and delivery of antipruritic agents. This was a natural leap, because dermatological case loads are high and topical products are key to the mediation of pruritic skin disorders. Topical products in this

form reduce the time and effort required for application, too, which results in higher client compliance and increased product effectiveness.

### **Novasome® Studies**

Novasome®-based dermatological products were studied at Cornell University in two common clinical situations. The first study evaluated the effectiveness of Novasome®-based versus non-encapsulated emollients in the management of wintertime dry skin in dogs, in which 20 affected dogs were treated with both types of products.

Prior to treatment, the test subjects had moderate to severe dryness of the skin and hair coat, and moderate to severe scale formation. The study results indicated the Novasome®-based emollient was the superior agent in 16 of the 20 dogs, or 80 percent. The Novasome® microvesicles were thought to act as potent humectants due to the water and fatty acid content of their walls, which tend to keep moisture levels constant.

The second study evaluated Novasome® and non-Novasome®-based shampoos that contained benzoyl peroxide, a potent antibacterial agent with a side effect of excessive drying. Study participants, having both normal and dry skin, were bathed on one side of their bodies with a Novasome® shampoo containing benzoyl peroxide and on the other side with a non-Novasome® shampoo containing benzoyl peroxide. Results indicated the Novasome®-based product decreased scaling in 70 percent of the test subjects while the non-Novasome® shampoo product decreased scaling in only 20 percent.

### **Commonly Used Topical Agents**

Shampoos - one of the most commonly used topical agents-containing microvesicles are usually formulated with a surfactant or a "baby" shampoo base, which is excellent for sensitive skin and frequent bathing. However, if the pet is extremely dirty it may be necessary to first bathe with a detergent-based shampoo for deep cleansing.

Many flea shampoos on today's market have detergent bases and are ideal for dirty, flea-covered pets. The initial cleansing can be followed with an encapsulated humectant rinse to counteract the drying effect of the detergent. Pet owners should be educated to use a surfactant-based sham-

poo on a regular basis to decrease detergent irritation of the skin.

For pets with "normal" hair coats, a surfactant-based, encapsulated shampoo should be selected for cleansing and may be followed by a rinse or spray for added moisture. Pets with dermatological conditions should receive special consideration. Active ingredients - such as sulfur, salicylic acid, coal tar and benzoyl peroxide - used to treat their symptoms are effective and useful, but can be harsh and dry the skin excessively. Use of the products must be carefully moderated. Products that contain microencapsulated humectants can combat these effects.

Sprays can be utilized between shampoos to condition and add extra, long-lasting moisture to the skin and hair coat. Each spritz of a microencapsulated product releases thousands of the tiny capsules without the effort of bathing. To encourage compliance, it is important to inform owners of the reasons for following the instructions for use.

Many types of dermatological products for pets are currently available for use by veterinarians and pet owners. Veterinarians should become familiar with the microencapsulated products and educate their clients, pointing out that client compliance is the key to successful treatment of any dermatological disorder.