



ThorneVet ModucareVET

Supports Healthy Immune Function

Formulated with phytosterols and their glycosides – sterols and sterolins derived from pine trees – that help balance an animal's immune response

An important advancement in balancing the immune response naturally

ModucareVET is a unique blend of plant sterols and sterolins that promote a balanced immune response. Supplementing with sterols and sterolins helps maintain a healthy balance of T-Helper-1 and T-Helper-2 white blood cells, which results in the beneficial down-regulation of an overactive immune response. Stress, environmental toxins, poor nutrition, antibiotic use, and certain disease states can each contribute to imbalances in immune function. The resulting hypo-immune response (not enough) or hyper-immune response (too much) can lead to a cascade of adverse health consequences.

Key Nutritional Support Features

- | Increases the activity of beneficial interleukin-2, gamma interferon, T-lymphocytes, and cytotoxic T-cells
- | Phytosterols are well-recognized as having a positive impact on immune function throughout the body
- | Helps down-regulate an overactive immune response by improving the balance between T-Helper-1 cells and T-Helper-2 cells
- | Helps maintain an optimal ratio of the two adrenal hormones – cortisol and DHEA – which helps down-regulate the animal's response to stress

ModucareVET – Special Nutrients

A unique blend of plant sterols and sterolins

Phytosterols – also known as **plant sterols** – and their **glycosides**, also known as **phytosterolins** – are **fats** that are naturally present in plants, fruits, and vegetables. Researchers have identified numerous immune-enhancing phytosterols in many plants. **Beta-sitosterol (BSS)** and its **glycoside, BSSG**, are two of the most abundant of these beneficial **plant sterols** and sterolins found in nature. Although **plant sterols** are similar in chemical structure to cholesterol, **plant sterols** and **sterolins** have been shown to exert many beneficial immune-supportive effects in both animal models and human studies.

Interleukin-2 is a signaling molecule that up-regulates many beneficial activities of white blood cells. For example, **interleukin-2** stimulates the production of **T-lymphocytes**, a major beneficial component of the body's adaptive immune system. **Interferon gamma** is a beneficial cytokine that enhances natural immunity. For example, **gamma interferon** stimulates **cytotoxic T-cells**, cells that destroy other cells that have been infected by pathogens like viruses and bacteria. Both **interleukin-2** and **interferon gamma** are secreted by **T-Helper-1 (TH1) cells**. Both **beta-sitosterol** and **BSSG**, even at very low levels, have been shown to favorably stimulate the activity of **TH1 cells**, thus resulting in a beneficial increase of **interleukin-2, gamma interferon, T-lymphocytes**, and **cytotoxic T-cells**, and thus contributing to overall healthy immune function.

Unfortunately, the normal activity of the immune system's **TH1 cells** can be chronically down-regulated by stress, environmental toxins, poor nutrition, antibiotic use, and certain disease states. The decreased activity of **TH1 cells** can cause a decrease in the level of **DHEA**, a beneficial hormone the animal uses to balance the level of cortisol, a hormone produced in the adrenal glands in response to stress. But chronic stress can cause too much cortisol to be produced, which can cause weight gain, muscle weakness, and many other health problems. **Plant sterols** have been shown to decrease the level of cortisol – in response to a lower level of **DHEA** – thus buffering the body's otherwise harmful responses to chronic stress.

When **T-Helper-2 (TH2)** white blood cells become activated in response to the presence of pathogens, they produce and secrete various kinds of **cytokines** (such as **interleukin-4, -6, and -10**), as well as **cytotoxic T-cells** and **tumor necrosis factor alpha**. The release of these **cytokines** stimulates the body's positive inflammatory responses to the presence of pathogens. But when there is too much **TH2 cell** activity, or if there is an imbalance in the ratio of **TH1 cells** to **TH2 cells**, then an over-abundance of **cytokines** can be produced and a hyperactive immune response can occur. By stimulating the activity of **TH1 cells**, the **plant sterols** in **ModucareVET** help maintain an optimal balance between TH1 cells and TH2 cells.

The bottom line

Supplementing with the plant sterols and sterolins in **ModucareVET** optimizes the balance of **TH1 cells** to **TH2 cells**, reduces inflammatory cytokine production, and helps maintain a normal DHEA-to-cortisol ratio, thus enhancing cellular immunity and down-regulating a hyperactive immune response.



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1/2 - 1 soft chew daily



2 soft chews per 25 pounds of body weight daily

VSP633-SC / 90 Soft Chews



GLUTEN FREE

PRODUCT FACTS

Active Ingredients per 1-gram Soft Chew:

Sterols (from pine) 20 mg

Sterolins 200 mcg

Inactive ingredients (soft chew matrix):

Arabic gum, buffered white distilled vinegar, chick pea flour, chicory root, citric acid, coconut glycerin, coconut oil, guar gum, natural hickory smoke flavor, rosemary extract, sunflower lecithin, sunflower oil, tapioca starch.

Note: This product contains Sterinol Complex from Essential Phytosterolins, Inc.

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