

# GlycoWell

- Promotes the Synthesis of Nitric Oxide
- Supports Optimal Circulation and Blood Flow
- Helps Maintain Healthy Vascular Permeability
- Helps to Preserve, Protect, and Regenerate the Endothelial Glycocalyx

**GlycoWell is formulated to strengthen the endothelial glycocalyx by providing the foundational building blocks that make up this delicate defensive barrier. Using a combination of high-dose glucosamine sulfate, hyaluronic acid, and a certified organic complex of fucoidan and marine polyphenols, GlycoWell delivers full-spectrum support to strengthen and protect the artery wall's microscopic, gel-like barrier.**

## Overview

The endothelial glycocalyx (eGCX) is a dense, gel-like meshwork that covers the endothelial cell layer. It makes up an important physical barrier in the vasculature that prevents lipids and other particles from adhering to and entering the endothelium. This special network of membrane-bound proteoglycans and glycoproteins has a profound influence at the vascular wall on the transmission of shear stress and pressure, the maintenance of selective permeability, and controlling adhesion of blood leukocytes and platelets.<sup>1</sup> Besides protecting endothelial barrier integrity, the dynamic microstructure of the eGCX confers remarkable functions, including mechanotransduction, control of vascular tone, and modulating vascular homeostasis.<sup>2</sup> Major constituents of the glycocalyx include syndecans, heparan sulfates and hyaluronan, which are shed from the endothelial surface as an expected part of the aging process<sup>3-5</sup> and under various stressors.<sup>1</sup> GlycoWell provides a blend of the major constituents of the eGCX, including glycosaminoglycans, hyaluronan, fucoidan and marine polyphenols, which are designed to protect and regenerate the endothelial glycocalyx.

## Mobilee® Hyaluronic Acid Matrix

Mobilee® is a hyaluronic acid matrix ingredient extracted from rooster comb that contains a high concentration of hyaluronic acid (60-75%) and other components, including polysaccharides (>10%) and collagen (>5%). Hyaluronic acid is a substance naturally produced by the body and present in our joints, skin and other organs. It is present in the endothelial glycocalyx and plays

a central role in numerous functions of the endothelial surface layer, such as protecting the endothelial cells, regulating barrier permeability, and ensuring mechanosensing, which is essential to nitric oxide production and flow-induced vasodilation.<sup>6</sup> According to research, the shedding of syndecan-1, heparan sulfate, and hyaluronic acid has been claimed to represent the endothelial glycocalyx state of health.<sup>7</sup> The quality and quantity of hyaluronic acid the body produces decreases with age. Tested in 11 clinical and pre-clinical studies, Mobilee® has been shown to provide a tenfold increase in the endogenous synthesis of hyaluronic acid by synoviocytes.<sup>8</sup>

## Glucosamine Sulfate

Glucosamine sulfate is a natural sugar found in and around the fluid and tissues that cushion joints. Glucosamine is a required nutrient for the synthesis of the rich glycosaminoglycan constituents that make up the structure of the eGCX. The eGCX is a carbohydrate-rich layer lining the vascular endothelium. It is connected to the endothelium through several backbone molecules, including proteoglycans and glycoproteins. A dynamic equilibrium exists between this layer of soluble components and circulating blood, continuously affecting the composition and thickness of the glycocalyx. Proteoglycans are generally considered to function as the most important "backbone" molecules of the glycocalyx. However, enzymatic removal of any constituents adversely affects GlycoWell properties, which demonstrates the importance of considering the synergistic interaction of all glycocalyx constituents as one fluid layer.<sup>9</sup>

In a NHANES study sample, 658 participants had been taking glucosamine/chondroitin for a year or longer. Respondents taking the glucosamine and chondroitin complex had better cardiovascular health and wellness than controls. After controlling for age, this combination was associated with a 65% reduction in cardiovascular challenges.<sup>10,11</sup> Finally, a different study investigated cardiovascular wellness in 77,510 residents of Washington state aged 50 to 76 years from 2000 to 2008 and found a lower likelihood of cardiovascular challenges with glucosamine supplementation.<sup>12</sup>

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## Maritech® Synergy

GlycoWell contains Maritech® Synergy, a proprietary, multifunctional, certified organic complex that combines the synergistic effects of specialized polyphenols and fucoidan sourced from the wild brown seaweed known as *Fucus vesiculosus*. In fact, of the three groups of seaweed, brown seaweed is known to contain more bioactive components than either red or green seaweed. Among the different brown seaweed species, *Ascophyllum nodosum* and *Fucus vesiculosus* have the highest antioxidant values and highest total phenolic content.<sup>13</sup> Therefore, fucoidan from brown seaweed is a powerful glycocalyx regenerating compound and has been reported to possess many cardiovascular health benefits. For example, fucoidan potently inhibits selectin-mediated adhesion of leukocytes to vascular endothelium.<sup>14</sup>

In addition to fucoidan, phlorotannins are a heterogeneous group of unique polyphenolic compounds differing in structure and degree of polymerization and are found only in brown seaweed, with the largest amount accumulating in *Fucus* brown seaweed.<sup>15</sup> Phlorotannins have very strong antioxidant properties since phenolic rings act as electron traps for free radicals. These bioactive compounds have been shown to help maintain normal inflammatory balance, modulate immune cell signaling, and even maintain blood sugar levels already within the normal range.<sup>16-20</sup>

One study showed the administration of *Fucus vesiculosus* is effective in reducing microvascular fat retention and improving glycemic control, thereby lowering the risk of health challenges related to the consumption of fat- and sugar-enriched diets.<sup>21</sup> In a 2022 study, the research showcased the link between endothelial glycocalyx degradation, barrier breakdown and induction of a pro-coagulant surface that could be targeted earlier to help maintain cardiovascular wellness.<sup>22</sup> The fucoidan sulfate in GlycoWell has an analogous chemical structure to heparan sulfate, which is found amply in the endothelial glycocalyx. It may, therefore, exert its biological activities by regenerating the endothelial glycocalyx.

## Directions

3 capsules per day or as recommended by your health care professional.

## Does Not Contain

Gluten, corn, yeast, artificial colors or flavors.

## Cautions

Do not consume this product if you are pregnant or nursing. Consult your physician for further information.

Supplement Facts <sup>V1</sup>		
Serving Size 3 Capsules Servings Per Container 30		
	Amount Per Serving	% Daily Value
Calories	10	
Total Carbohydrate	2 g	1%*
Protein	<1 g	<1%*
Sodium	15 mg	1%
Potassium (from Glucosamine Sulfate Potassium Chloride USP)	199 mg	4%
Proprietary Blend	2.3 g	
Glucosamine Sulfate Potassium Chloride USP		**
<i>Fucus Vesiculosus</i> Seaweed Extract (Whole Plant) (Maritech® Synergy) (Contains Fucoidan and Polyphenols)		**
Chicken Comb Extract (MOBILEE®) (Standardized to contain 40 mg Hyaluronic Acid)		**
* Percent Daily Values are based on a 2,000 calorie diet. ** Daily Value not established.		

Other Ingredients: Hypromellose (Natural Vegetable Capsules), Microcrystalline Cellulose, Magnesium Stearate and Silicon Dioxide.

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