**Clinical Applications**

» Helps Support Healthy Blood Glucose Metabolism*

» Helps Reduce the Impact of High-Glycemic Foods*

» Supports Healthy Insulin Sensitivity*

» Helps Slow Starch and Table Sugar Digestion and Absorption*

*InSea® is an optimized blend of purified polyphenols from brown seaweed. It uniquely slows carbohydrate digestion by interacting with both alpha-amylase and alpha-glucosidase, thereby reducing the impact of high-glycemic foods.*

**Discussion**

**Dual Action** InSea® is the only product on the market with a dual mechanism of action that targets enzymes involved in carbohydrate digestion and assimilation. Its dual action is a result of its ability to uniquely slow carbohydrate digestion through interaction with both alpha-amylase (starch-degrading enzyme) and alpha-glucosidase (sucrose-degrading enzyme). This twofold activity helps reduce the impact of high-glycemic foods.*

**Brown Seaweed** InSea® is a clinically tested blend of 20% purified polyphenols—more precisely phlorotannins (PHTs)—sourced from Ascophyllum nodosum (kelp) and Fucus vesiculosus (bladderwrack), two species of brown seaweed. Like many sea plants, these brown seaweeds are a rich source of antioxidant phenolic compounds and iodine. The ability of naturally occurring polyphenols and PHTs, including those from brown seaweed, to affect the activities of alpha-amylase and alpha-glucosidase enzymes in vitro has been repeatedly demonstrated.*[1-5]

**Experimental Studies** In one experiment, Roy et al showed that InSea® has a dose-dependent effect on alpha-amylase and alpha-glucosidase with very low IC50 values compared to other plant polyphenols. In animals, the extract was able to reduce by 90% (p < 0.05) the increase in postprandial blood glucose normally seen 30 minutes after a meal and to reduce peak insulin secretion by 40%. Blood glucose curves showed characteristic features of a low glycemic food; that is, in treated animals, glucose absorption was prolonged for 360 minutes compared to less than 120 minutes in the control group. In addition, the control group experienced some postprandial hypoglycemia before returning to baseline. This condition was absent in the treated group. According to the researchers, “These results demonstrate the potency of this specific PHT extract to beneficially modulate carbohydrate digestion and assimilation.”* [2]

**Human Studies: Starch and Table Sugar** Dual-action InSea® is the only ingredient on the market able to slow down digestion of both starch and table sugar, thus reducing the impact of high-glycemic foods. In a randomized, crossover, double-blinded, placebo-controlled human clinical trial, when compared to placebo, consumption of InSea® (500 mg/d) 30 minutes before ingesting white bread resulted in a 12.1% reduction in the plasma insulin incremental area under the curve (IAUC) (p = 0.04, adjusted for baseline) and a 7.9% increase in the Cederholm index of insulin sensitivity (p < 0.05). There was also a 9.0% and 48.3% drop in plasma glucose AUC and IAUC, respectively.*[10] These improved glucose responses to white bread were further validated in a small human study conducted by an independent consumer wherein InSea® was able to reduce postprandial blood glucose AUC by 14.5% and blood glucose IAUC by 28.1%.*[7]

In an unpublished sucrose tolerance test, patients ingested 500 mg of InSea® in a lemon tea or a placebo lemon tea, both of which contained 50 g of sucrose. Although results did not achieve significance, a reduction in the glucose IAUC (-39%) and a near-significant trend toward an increase in the Cederholm index (+4.9%) were observed.*[8]

In effect, lowering the postprandial blood glucose response naturally promotes healthy glucose metabolism and insulin sensitivity. In another human trial, treatment with a multi-ingredient formulation containing InSea® resulted in increased feelings of satiety, a decrease in next-meal caloric intake, and a significant impact on weight reduction compared to placebo.*[9]

**Safety** InSea® comes from two species of brown seaweed that are considered foods. The actives are obtained via hot water extraction methods that meet the highest criteria in terms of quality, purity, and biological activity. InSea® has been evaluated in clinical trials, animal safety and efficacy studies, and in vitro tests. It has an excellent safety profile and is well-tolerated.*
InSea® Supplement Facts

Serving Size: 2 Capsules

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<tr>
<th></th>
<th>Amount Per Serving</th>
<th>% Daily Value</th>
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<tbody>
<tr>
<td>Iodine (naturally occurring in brown seaweed blend)</td>
<td>150 mcg</td>
<td>100%</td>
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<tr>
<td>Brown Seaweed Blend (Ascophyllum nodosum and Fucus vesiculosus)(20% polyphenols)(InSea®)</td>
<td>500 mg</td>
<td>**</td>
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** Daily Value not established.

Other Ingredients: HPMC (capsule), microcrystalline cellulose, stearic acid, magnesium stearate, and silica.

DIRECTIONS: Take one to two capsules 20-30 minutes before carbohydrate-containing meals, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Not intended for use by pregnant or lactating women or children under 12. Patients taking blood-glucose lowering medication should be monitored for hypoglycemia. Do not use if tamper seal is damaged.

DOES NOT CONTAIN: Wheat, gluten, corn, yeast, soy, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or preservatives.

STORAGE: Keep tightly closed in a cool, dry place out of reach of children.

References

7. Customer tests: Validation of starch-blocking action of InSea® in Asian population. Technical note: InSea®. [on file]

Additional references available upon request