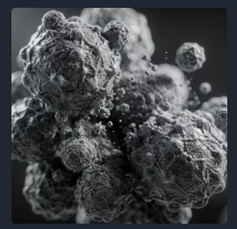
OCEANICARE™ SC-23P Bioactive Profile

Relevant Mechanisms of Key Marine Compounds For Cellular Health - *Focus on Frondoside A*

PRIMARY ONCOLOGY-RELEVANT BIOACTIVE

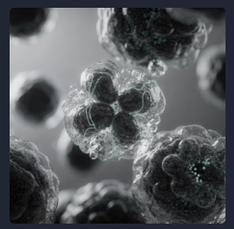
Frondoside A — Triterpene Glycoside

Frondoside A is the most extensively studied bioactive in *Cucumaria frondosa*, demonstrating broad-spectrum anticancer activity across multiple preclinical models. Its mechanisms target fundamental oncological processes — from tumor cell survival to vascularization and metastatic spread.



Apoptosis Induction

Activates caspases 3, 7, and 9; upregulates p53 tumor suppressor pathways to promote selective cancer cell death.



Cell Cycle Arrest (G2/M)

Increases p21 expression, halting tumor cell proliferation at the G2/M checkpoint.

Anti-Angiogenic Activity

Downregulates VEGF/VEGFR signaling pathways, limiting the formation of tumor-supportive blood supply.

Anti-Metastatic Effects

Inhibits RAC1, CDC42, and PAK1 migration pathways, reducing tumor invasion and systemic spread.

Chemotherapy Synergy

Preclinical models demonstrate enhanced efficacy when combined with paclitaxel, cisplatin, and gemcitabine — suggesting potential as an adjunctive agent.

Clinical Positioning (Compliant)

Supports healthy cellular regulation, apoptosis signaling, and anti-angiogenic balance within physiological ranges.

UNIQUE MARINE GLYCOSAMINOGLYCAN

Fucosylated Chondroitin Sulfate (FCS)

Fucosylated Chondroitin Sulfate is a structurally distinctive glycosaminoglycan found exclusively in Oceanicure sea cucumbers. Its unique fucosylated branching pattern confers biological activity not observed in terrestrial chondroitin sulfates, positioning it as a compound of emerging oncological relevance.

Anti-Inflammatory Modulation

Reduces pro-inflammatory cytokines TNF-α, IL-1β, and IL-6. Modulates NF-κB signaling to regulate chronic tumor-promoting inflammation — a recognized driver of oncogenesis.

Tumor Microenvironment Support

May attenuate chronic inflammatory signaling within the tumor microenvironment, reducing conditions that facilitate tumor growth and immune evasion.

Anti-Metastatic Potential

Inhibits selectin-mediated tumor cell adhesion — a critical step in hematogenous metastasis — by interfering with circulating tumor cell–endothelium interactions.

Anticoagulant / Anti-Thrombotic Activity

Demonstrates anticoagulant properties that may reduce cancer-associated thrombosis risk, a significant source of morbidity in oncology patients.

Clinical Positioning (Compliant): Supports healthy inflammatory signaling and tumor microenvironment balance through naturally occurring marine glycosaminoglycan activity.

IMMUNE & APOPTOTIC SUPPORT

Sulfated Polysaccharides — Fucoidan-Like Compounds

Sulfated polysaccharides derived from *Cucumaria frondosa* share structural and functional similarities with fucoidan, a well-characterized marine bioactive. These compounds exert pleiotropic effects that support immune surveillance and regulate cellular turnover.

1 Immune System Modulation

Enhances Natural Killer (NK) cell cytotoxic activity, bolstering immune surveillance of aberrant and transformed cells — a key mechanism in cancer immunology.

2 Apoptotic Signaling

Activates both intrinsic (mitochondrial) and extrinsic (death receptor) apoptosis pathways, promoting elimination of damaged or malignant cells.

3 Anti-Angiogenic Effects

May suppress the formation of new tumor-supporting vasculature, complementing the anti-angiogenic activity observed with Frondoside A.

Clinical Positioning (Compliant)

Supports immune defense mechanisms and healthy cellular turnover consistent with normal physiological function.

SIGNALING & STRUCTURAL SUPPORT

Marine Peptides & Collagen-Derived Compounds

The marine peptide and collagen-derived fraction of *Cucumaria frondosa* contributes bioactive sequences capable of modulating intracellular signaling cascades central to oncogenic processes. These compounds also provide structural support relevant to tissue resilience during metabolic stress.

Cell Signaling Modulation

Marine peptides may influence the PI3K/AKT and MAPK signaling pathways — two of the most frequently dysregulated cascades in solid and hematologic malignancies — with implications for controlling tumor cell growth and survival.

Anti-Proliferative Effects

Specific peptide sequences have demonstrated the capacity to interfere with cancer cell signaling, potentially disrupting downstream effectors that drive uncontrolled cellular replication.

Tissue Repair Support

Collagen-derived compounds play a functional role in supporting tissue integrity and repair — particularly relevant for patients experiencing physical stress during oncologic treatment and recovery.

Clinical Positioning (Compliant): Supports cellular signaling balance and tissue integrity through bioactive marine peptides with pleiotropic modulatory potential.

LIPID MEDIATORS & METABOLIC HEALTH

Omega-3 Fatty Acids & Phospholipids — EPA-Rich

The EPA-enriched lipid fraction of *Cucumaria frondosa* contributes clinically relevant anti-inflammatory and membrane-modulatory activity. These compounds occupy a well-established place in oncology-supportive nutrition science.

Anti-Inflammatory Lipid Mediators

EPA-derived resolvins and protectins shift eicosanoid balance toward pro-resolution pathways, attenuating the chronic inflammatory milieu that promotes tumor progression and immune suppression.

Membrane Fluidity & Receptor Signaling

Phospholipid integration into cell membranes enhances membrane fluidity, influencing receptor conformation and downstream signaling — including pathways relevant to cancer cell responsiveness.

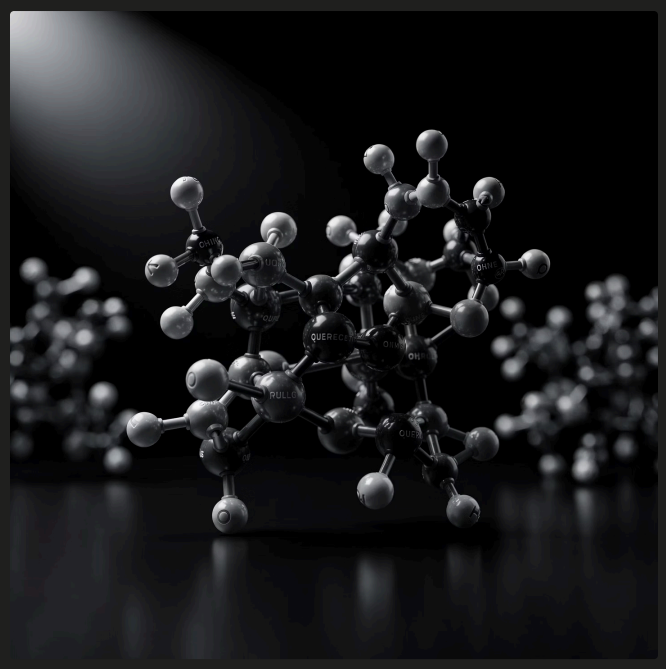
Cancer-Related Cachexia Support

EPA-rich supplementation has been studied for its potential to attenuate cancer-related cachexia by maintaining metabolic balance and reducing muscle protein catabolism in advanced disease states.

Clinical Positioning (Compliant): Supports resolution of inflammation, healthy cell membrane function, and metabolic homeostasis in the context of oncologic care.

ANTIOXIDANT DEFENSE

Phenolic Compounds — Antioxidant Support



Key Phenolic Classes

Quercetin-like flavonoids, catechins, and gallic acid derivatives — sourced from the marine diet of *Cucumaria frondosa* — contribute a potent antioxidant layer to the OCEANICURE™ bioactive profile.

Antioxidant Activity

Directly neutralizes reactive oxygen species (ROS), reducing oxidative stress — a well-documented contributor to DNA damage and malignant transformation.

DNA Protection

Mitigates oxidative DNA damage associated with carcinogenesis by scavenging free radicals before they can cause strand breaks or mutagenic base modifications.

Synergistic Bioactive Support

Phenolics work in concert with other OCEANICURE™ bioactives — stabilizing the cellular environment and potentially amplifying the effects of Frondoside A, FCS, and sulfated polysaccharides through complementary antioxidant buffering.

Clinical Positioning (Compliant): Supports antioxidant defenses, genomic stability, and cellular protection against oxidative contributors to carcinogenesis.

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Compliance Statement

OCEANICARE™ is designed to support healthy inflammatory balance, immune function, cellular and joint health.

This product is not intended for use by those persons pregnant or nursing.

Notice: These statements have not been evaluated by the US Food & Drug Administration.
This product is not intended to diagnose, treat, cure, or prevent any disease.