

# Biofilm Neutralizer\*

with EDTA

Bacteria often grow within biofilm, a slimy coating that adheres to living tissues. Biofilm is a thick and sticky substance comprising proteins, polysaccharides and other biomaterials along with divalent cations. This self-made matrix surrounds and shields the microbes from exposure to immune cells and antimicrobial molecules.\* Biofilm complexes are notoriously difficult to disrupt.\*

**Biofilm Neutralizer\*** (with EDTA) comprises two orally-available enzymes, trypsin and serrapeptidase, along with alpha-lipoic acid and EDTA (ethylenediaminetetraacetic acid), in a delayed-release capsule (DRCaps®). This mixture is designed to disrupt the bonds that hold biofilm together.\*



#58290  
60 delayed-release  
vegetarian capsules

## Key Features

- May help reduce biofilm adhesion, viscosity, and stability.\*
- May increase the penetration of antimicrobial molecules into biofilm complexes.\*
- Improves the oxidative stress associated with biofilm formation.\*



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**Serrapeptidase** (serratiopeptidase) is a proteolytic enzyme produced by *Serratia*, a microbe that lives in the digestive tract of various species.\* Originally isolated from the silk worm, serrapeptidase allows the emerging moth to dissolve its cocoon.\* Purified serrapeptidase has been shown to break down biofilm-associated proteins without harming human tissues.\* Serrapeptidase is orally available, and it has systemic fibrinolytic effects.\*

**Trypsin** is a proteolytic enzyme made by the pancreas.\* It digests a wide range of substrates including bacterial proteins.\* Trypsin has been shown to reduce the viscosity and permeability of the biofilm matrix, and to loosen the attachment of biofilm to living tissues.\* Additionally, trypsin removes bacterial surface proteins.\* Supplemental trypsin is orally available, with the active enzyme appearing in the bloodstream shortly after ingestion.\*

**Alpha-lipoic acid (ALA)** is a potent antioxidant found in plants and animals.\* Low antioxidant capacity leads to oxidative stress, which triggers microorganisms to shift to a biofilm-producing state.\* In clinical trials, ALA has been shown to improve total antioxidant capacity by increasing glutathione, the master antioxidant within cells.\* Adequate glutathione levels are associated with healthy immune function.\* Additionally, both ALA and glutathione have direct biofilm-disrupting effects.\*

**EDTA Calcium Disodium Salt: EDTA** (ethylenediaminetetraacetic acid) is a chelator that binds divalent cations.\* Oral EDTA formulations are sometimes used to remove heavy metals, such as lead, from the body.\* EDTA loosens the bonds between calcium and alginate, a polysaccharide that strengthens the biofilm matrix.\* The addition of EDTA enhances the penetration of antimicrobial molecules into biofilm complexes.\* The calcium disodium form of EDTA is preferred because it protects serum calcium levels.\*

#### References

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## Supplement Facts

Serving Size		1 Capsule
Servings Per Container		60
Amount Per Serving	% Daily Value*	
Calcium (from 100 mg of EDTA Calcium Disodium salt)	6 mg	<1%
Sodium (from 100 mg of EDTA Calcium Disodium salt)	9 mg	<1%
Alpha Lipoic Acid	150 mg	†
Trypsin 1:150 Powder (containing at least 15,000 units of protease)	50 mg	†
Serrapeptidase 70,000 SPU	35 mg	†

† Daily Value not established.

\* Percent Daily Value are based on a 2,000 calorie diet.

Other ingredients: Hydroxypropyl methylcellulose, microcrystalline cellulose, stearic acid, silicon dioxide.

**Suggested Use:** As a dietary supplement, 1 capsule one or two times daily between meals, or as directed by a healthcare practitioner.

**Caution:** EDTA is known to deplete minerals, so repletion is suggested. Higher doses or long-term use require the guidance of a qualified healthcare practitioner with ongoing monitoring of liver and kidney function.

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