

Prostaglandins Leukot Essent Fatty Acids.

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Omega-3 fatty acids in dry eye and corneal nerve regeneration after refractive surgery.

[He J](#), [Bazan HE](#).

Department of Ophthalmology, Louisiana State University Health Sciences Center, New Orleans, LA 70112, USA.

Abstract

Dry eye (DE) is a multifactorial condition that affects the surface of the eye and induces an inflammatory response. Corneal nerves play an important role in the maintenance of a healthy ocular surface. Here we review corneal structure, nerve architecture, DE conditions, and nerve regeneration following corneal surgery and discuss how n-3 fatty acids affect the health of the cornea. Animal studies show that resolvins, compounds derived from eicosapentaenoic acid (EPA), increase tear volume and decrease inflammation induced by DE. After corneal surgery in rabbits, treatment with nerve growth factor (NGF) or pigment epithelial derived factor (PEDF) in conjunction with docosahexaenoic acid (DHA) increase nerve density and corneal epithelial cell proliferation. Increased synthesis of the novel docosanoid, neuroprotectin D1 (NPD1), was found in corneas after the animals were treated with PEDF and DHA. Topical application of these lipids derived from n-3 fatty acids could be useful in treating DE and prevent clinical complications such as cornea erosion and ulcerations.

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