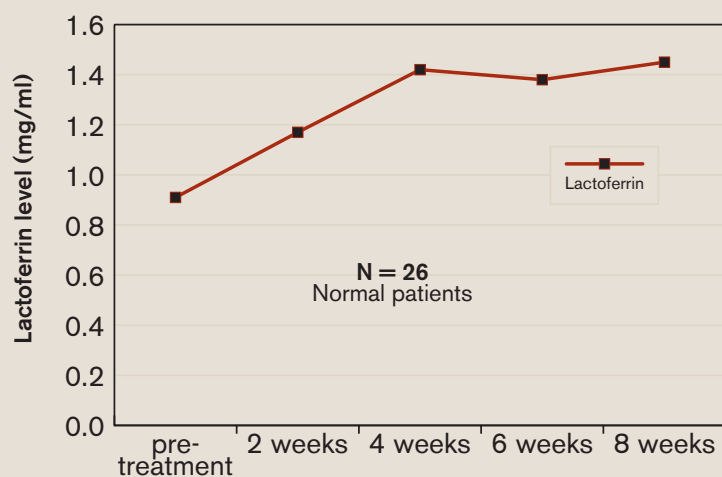


## General

### Nutritional supplement may help mitigate dry eye symptoms Product is useful in improving tear composition as well as reducing tear evaporation

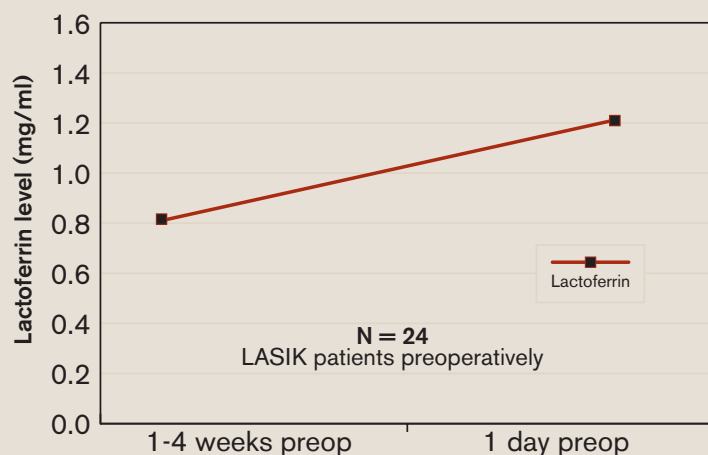
**Figure 1** Nutraceutical (HydroEye) treatment and lactoferrin levels



OT Graphic

Source: Frank A. Bucci Jr., MD

**Figure 2** Nutraceutical (HydroEye) treatment and lactoferrin levels



OT Graphic

Source: Frank A. Bucci Jr., MD

**By Cheryl Guttman**

Reviewed by Frank A. Bucci Jr., MD

**Wilkes-Barre, PA**—An oral nutraceutical product (HydroEye, ScienceBased Health) appears to have significant potential for relieving dry eye associated with LASIK and other etiologies, said Frank A. Bucci Jr., MD.

The agent, which contains omega-3 and omega-6 fatty acids derived from black currant seed and cod liver oils along with a proprietary blend of mucin complex and nutrient co-factors, is formulated to improve tear composition as well as reduce tear evaporation. Its patent is pending.

Dr. Bucci, a private practitioner in Wilkes-Barre, PA, said that in initial studies he has conducted, individuals who took the nutritional supplement twice daily achieved marked increases in tear concentration of lactoferrin, the lacrimal protein considered a marker for ocular surface health. Changes were noted as early as 2 weeks after treatment began.

“Omega fatty acids are thought to improve tear quality through effects on the character of the oil component, and for some years, I and other ophthalmologists have used flaxseed oil in patients with dry eye associated with meibomian gland dysfunction,” he said. “This nutritional product contains omega fatty acids but also other ingredients said to have positive effects on the aqueous and mucin components of the tears.

“There have been a tremendous number of anecdotal reports associating its use with dramatic improvement in patients affected by dry eye,” he said. “Those reports are consistent with our findings on changes in lactoferrin levels, and a controlled study is now under

## Take-Home Message

Results from two small studies show treatment with a nutraceutical product containing omega fatty acids plus mucin complex increases tear lactoferrin levels in normal subjects and patients scheduled for LASIK. An ongoing trial is comparing changes in lactoferrin levels pre- and post-LASIK among patients receiving the nutritional supplement and untreated controls.

way to investigate further a potential role of this product in mitigating post-LASIK dry eye.”

### Change in lactoferrin levels

A first study of the ocular effects of the nutraceutical product enrolled 13 subjects without dry eye complaints who had tear lactoferrin level assays performed before treatment and at 2, 4, 6, and 8 weeks during treatment. The mean lactoferrin level was normal (0.91 mg/ml) at baseline and increased over the follow-up period, rising 28% from baseline at 2 weeks to 56% at 4 weeks, and reached 60% or higher than the entry level at 8 weeks.

“We really didn’t anticipate seeing that amount of change, and so those results were very exciting,” Dr. Bucci said.

Next, a second small group of patients scheduled for LASIK were pretreated with the nutritional supplement before their scheduled surgery. After a treatment duration ranging from 1 to 4 weeks (mean, 18.5 days), the tear lactoferrin level in that

cohort of patients rose 40%, from 0.83 mg/ml at baseline to 1.17 mg/ml on the day before surgery.

“Flap creation causes a neurotrophic cornea in every patient who undergoes LASIK, and by definition, decreased tear production occurs in 100% of those individuals,” he said. “Taking this nutritional supplement before surgery supports the corneal epithelium, and it optimizes ocular surface health, which might be beneficial for preventing significant problems with dry eye that can affect up to one-third of patients after LASIK.”

In his ongoing controlled study, LASIK candidates are being assigned to receive no treatment or the nutritional supplement beginning 1 month prior to surgery and continuing during the first month postop. Lactoferrin levels are being measured at baseline, on the day before surgery, and again at 1 day and 1 month post-LASIK. Signs and symptoms of dry eye will also be recorded, but are being considered only as secondary endpoints.

“Conventional signs and symptoms of dry eye are not reliable markers of the presence or severity of this problem in neurotrophic, post-LASIK eyes. Rather, these individuals tend to complain more about dissatisfaction with the quality of their vision,” Dr. Bucci said. “The lactoferrin test is useful for assessing dry eye in this setting because it is an objective measure with results generally accepted as an indicator of ocular surface health.”

Patients who are given the nutritional supplement are instructed to take it with food, in order to minimize the risk for any

gastrointestinal upset. The manufacturer recommends that individuals taking anti-coagulant medications check with their physician first because there is a theoretical potential for the supplement to affect platelet adhesion. Dr. Bucci noted anecdotally that a number of the patients he has treated have been taking warfarin (Coumadin) concomitantly and prothrombin time monitoring in those individuals has shown no evidence of any interaction.

### Prophylactic use of punctal plugs

In other research aiming to identify modalities to mitigate the impact of LASIK on tear production, Dr. Bucci is evaluating the use of punctal plugs. He reported finding that in patients who underwent bilateral LASIK with postoperative punctal plug placement in only one eye, within 1 day, tear lactoferrin concentration was 20% higher in the plugged versus untreated eye.

Currently, he is assessing the value of using the punctal plugs in a prophylactic approach to improve the characteristics of the ocular surface before surgery. **OT**

## FYI

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In his studies, Dr. Bucci measured lactoferrin levels using an assay kit from Touch Scientific. Dr. Bucci has no financial interest in that company or ScienceBased Health.