Altemia®

(emulsified-docosahexaenoic acid triglyceride, eDHAtg)

PRODUCT INFORMATION

INTENDED USE

ALTEMIA is a medical food product intended for the dietary management of sickle cell anemia.

ALTEMIA must be administered under medical supervision.

DESCRIPTION

Each ALTEMIA PACKET (5 mL net volume) contains a flavorful orange smoothie consisting of 2400mg of emulsified DHA, 400mg of EPA, and 150mg of of other n-3 fatty acids consisting of n-3, n-9. Altemia incorporates other GRAS ingredients: pasteurized egg yolk (Choline), water, orange oil, non-GMO canola oil, ascorbic acid, sucralose, citric acid, sodium ascorbate, menthol, xanthan gum, potassium sorbate, sodium benzoate, and beta-carotene.

ALTEMIA does not contain any milk-derived ingredients such as lactose, casein, or whey. ALTEMIA is gluten-free, dye-free, and soy-free. **CONTAINS: Egg, fish oil**.

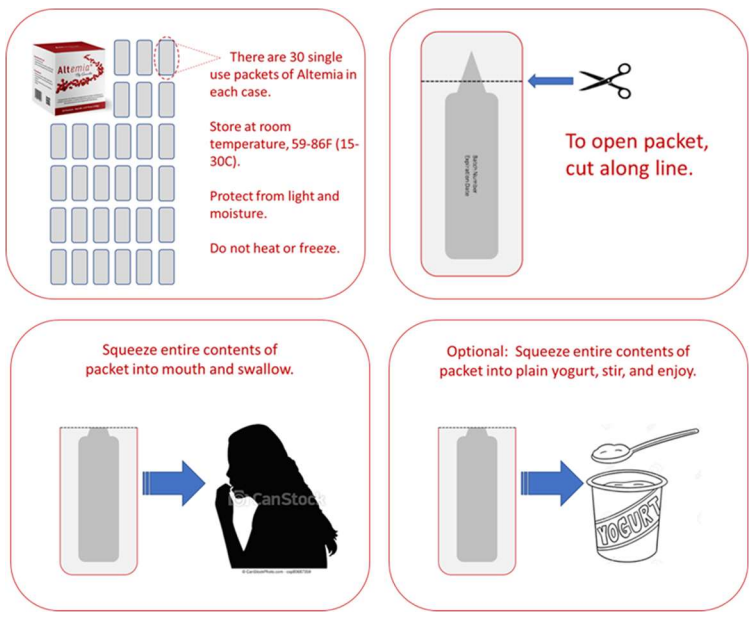
DIRECTIONS FOR USE

ALTEMIA should be taken once daily.

ALTEMIA is not water soluble and should not be mixed with liquids.

ALTEMIA may be mixed with yogurt, pudding or spread on bread rolls, pancakes and waffles for consumption.

Do not cook, heat, or freeze.



STORAGE

Store packets at 20-25°C (68-77°F): excursions permitted between 15-30°C (59-86°F). Protect from light and moisture. Dispose of open packets after consumption. Do not store open packets in refrigerator overnight.

DOSING

The recommended dose of ALTEMIA is based on the weight of the individual.

Weight	# of packets per day
<100kg	1 packet
>100kg	2 packets

There is no restriction on the length of time ALTEMIA may be consumed.

Pediatric Patients - Children 2 years and older can be administered one half (1/2) PACKET of ALTEMIA once daily (or in divided doses) according to the healthcare provider's instructions. Do not store opened packets overnight.

MEDICAL FOODS

ALTEMIA is a medical food as defined by the Orphan Drug Act.1 Medical supervision is required.

The term medical food, as defined by the Orphan Drug Act (21 U.S.C. 360ee(b)(3)) of 1988, is "a food which is formulated to be consumed or administered enterally under the supervision of a physician and which is intended for the specific dietary management of a disease or condition for which distinctive nutritional requirements, based on recognized scientific principles, are established by medical evaluation." Ingredients in medical foods must be generally recognized as safe (GRAS) and/or approved food additives.

ALTEMIA is manufactured in compliance with current Good Manufacturing Practice (cGMP) for medical foods.

Generally Recognized as Safe

The ingredients in ALTEMIA are Generally Recognized as Safe (GRAS). GRAS is a statutory safety standard that the FDA requires of all ingredients added to food products. Therefore, ALTEMIA is safe for use in the general population.

SICKLE CELL DISEASE

Sickle Cell Disease (SCD) is a genetic disorder in which there is a mutation in the hemoglobin (HbS) protein. Approximately 100,000 cases of SCD exist in the United States.

HbS can oxidize DHA located in the cell membrane of red blood cells, significantly depleting natural levels of DHA, leading to "ridged cells" and cell death. Inflammation associated with SCD triggers red blood cells to stick together, slowing them down in blood vessels, and causing them to release their bound oxygen. This triggers the cells to form the characteristic "sickle" shape and cause vaso-occlusive crises events. DHA blood levels are low in sickle cell patients due this unnatural and excessive depletion of DHA.

PHARMACOLOGY

Mechanism of Action

Unlike common dietary supplement fish oils, ALTEMIA contains a specially formulated source of DHA that may aid in the management of sickle cell disease. The DHA has been shown to demonstrate anti-inflammatory potential by altering blood levels of inflammatory proteins, including those implicated in human sickle cell disease. While the mechanism of action of DHA has not been fully elucidated, the reductions of inflammatory agents may prevent the inflammatory cascade associated with vaso-occlusive crises, pain associated with VOC, and potentially emergency hospitalizations. The resultant dampening of inflammation is believed to allow for restoration of erythrocyte homeostasis, leading to resumption of normal hemoglobin function and blood flow.

The effect of ALTEMIA's ability to restore DHA levels fulfills a distinctive nutritional requirement associated with sickle cell disease where reduced DHA levels may lead to chronic VOC's, VOC associated pain or visits to the hospital due to VOC pain and adequate levels of DHA cannot be provided by normal dietary intake of DHA alone or by increased intake of over the counter supplements due to patient compliance issues regarding taste, smell or large size or due to lack of bioavailable DHA exacerbated by food effects.

Digestibility/ Bioavailability/ Food Effects

Following ingestion, the emulsified formulation of DHA in ALTEMIA is immediately available for absorption in the GI tract. The unique compositional structure of ALTEMIA helps it during gastrointestinal transit in order to reach the circulating blood where it can impart the intended benefit. The digestion and safety of DHA has been studied in multiple clinical trials. Results of the studies showed a significant increase in the plasma concentrations of DHA, reduction in inflammatory biomarkers and clotting factors, and improvements in RBC membrane elasticity. Differences in absorption through the GI tract may occur as a result of variations in each individuals GI tract. However, the emulsified formulation of ALTEMIA is designed to eliminate any food effect, and ALTEMIA may be taken with or without food and achieve expected results.

Previous studies using DHA preparations without ALTEMIA technology have shown that up to 50% reduction of bioavailability of DHA in circulation. The reduction of circulating DHA levels may not deliver the appropriate levels of DHA required for the intended effect of ALTEMIA in the dietary management of sickle cell disease.

Nutrition Facts

30 Servings Per Container

Serving Size	**1 packet (5g)**
Amount per serving	
Calories	**36**
	% Daily Value
Total Fat	3.5g	4%[1]
Polyunsaturated Fat	3.5g	
Total Carbohydrate	0.0g	
Total Protein	0.5g	
eDHAtg	2.4g	*
eEPAtg	0.6g	*
eOmega-3	0.15g	*
Vitamin C	87.5mg	100%
Choline	3.2mg	<1%

[1] Percent Daily Values are based on a 2000 calorie diet.

* Daily Value not established

Contains: Egg, Fish

PRECAUTIONS AND WARNINGS

ALTEMIA contains egg yolk protein, fatty acids derived from fish; therefore, patients who have an allergy to egg or fish or any component of ALTEMIA should not take this product.

Pregnancy, Labor and Delivery and Nursing Mothers

ALTEMIA has not been studied in pregnant women, in women during labor or delivery or in nursing mothers. The choice to administer ALTEMIA during pregnancy, labor or delivery, or in nursing mothers is at the clinical discretion of the prescribing physician.

DRUG AND FOOD INTERACTIONS

No significant interactions of ALTEMIA with commonly prescribed medications or therapies have been reported. There are no known adverse food interactions with ALTEMIA. Omega-3-acids high in EPA may prolong bleeding time. Patients taking ALTEMIA and an anticoagulant or other drug affecting coagulation (e.g., anti-platelet agents) should be monitored periodically.

PRODUCT SAFETY: ADVERSE EVENTS / ADVERSE REACTIONS

The ingredients in ALTEMIA are Generally Recognized as Safe (GRAS) for use in the general population. The safety profile of the active ingredients in the product has been documented in clinical trials and retrospective chart reviews that describe adverse events (AEs)/adverse reactions in subjects/patients.

Clinical Trials

In well-controlled clinical trials and open-label studies (Table 1) completed to date under IRB approved protocols, over 15,000 daily doses of DHA provided as ALTEMIA or as DHA in alternative forms have been administered. The most common AEs reported in each study include abdominal cramps, constipation, diarrhea, flatulence, headache, and nausea. The majority of these AEs were judged by the investigators as mild or moderate in intensity and not related to DHA.

Post-Marketing Surveillance

To report SUSPECTED ADVERSE REACTIONS, contact Lobe Sciences, Ltd. at altemia@lobesciences.com or FDA at 1-800-FDA-1088 (1-800-332-1088) or www.fda.gov/medwatch.

TABLE 1. DHA CLINICAL TRIAL EXPERIENCE

Population Studied	**Data Source**	**Safety Summary**
Sickle Cell Disease N=67	Phase 2 Clinical Trial: RDBPC dose-finding to assess safety, tolerability, and efficacy of 3 weight-based dose levels.	The most frequent SAE (sickle cell crisis) occurred in 8 placebo subjects (47.1%) and 11 subjects treated with 1 of the 3 active doses (22.0%). The percentage of subjects who experienced severe SAEs was higher in the placebo group (52.9%) than in the group randomly assigned to active doses 20 mg/kg (31.3%), 36 mg/kg (33.3%), and 60 mg/kg (31.3%). AEs reported in more than 5% of the subjects who received 1 of the 3 active doses were abdominal pain, nausea, pyrexia, and headache.
Sickle Cell Disease N=10	Phase 2 Clinical Trial: Open-label, multicenter study of food enriched with DHA.	After patient diary entries were assessed, following the 28-day treatment with the food enriched with eDHATG, it was found that participants were complaint to the treatment study. Additionally, no adverse event was observed during the study. There were also no clinically significant changes in vital signs, physical examination measures, or clinical laboratory evaluation values.

References:

RBC Plasticity Increased

Spector, A.A., & Kim, H.Y. (2015). Discovery of essential fatty acids. Journal of Lipid Research, 56(1), 11-21.

Tricerri, M.A., et al. (2017). Inhibitory effect of docosahexaenoic acid on adhesion of sickle red blood cells to vascular endothelial cells. Scientific Reports, 7(1), 13294.

Hemoglobin Oxidation Reduced / Antioxidant effects of DHA

Daak, A.A., Lopez-Toledano, M.A., Heeney, M.M. (2020) Biochemical and therapeutic effects of Omega-3 fatty acids in sickle cell disease. Complementary Therapies in Medicine. 52 (2020) 102482.

Giriraja et al. (2023) An open-label, multicenter, phase 2 study of a food enriched with docosahexaenoic acid in adults with sickle cell disease. Prostaglandins, Leukotrienes and Essential Fatty Acids.

Reduction of Vaso-Occlusive Events in Sickle Cell Disease

Daak et al. (2018). Double-blind, randomized, multicenter phase 2 study of SC411 in children with sickle cell disease (SCOT Trial). Blood Advances.

Reduction of Hospitilizations

Daak et al. (2018). Double-blind, randomized, multicenter phase 2 study of SC411 in children with sickle cell disease (SCOT Trial). Blood Advances.

Anti-inflammatory effects of DHA in Sickle Cell Disease

Calder, P.C. (2015). Marine omega-3 fatty acids and inflammatory processes: Effects, mechanisms, and clinical relevance. Biochimica et Biophysica Acta (BBA) - Molecular and Cell Biology of Lipids, 1851(4), 469-484.

Simopoulos, A.P. (2008). The importance of the omega-6/omega-3 fatty acid ratio in cardiovascular disease and other chronic diseases. Experimental Biology and Medicine, 233(6), 674-688.

Giriraja et al. (2023) An open-label, multicenter, phase 2 study of a food enriched with docosahexaenoic acid in adults with sickle cell disease. Prostaglandins, Leukotrienes and Essential Fatty Acids.

DHA Replacement Therapy

Daak et al. (2018). Double-blind, randomized, multicenter phase 2 study of SC411 in children with sickle cell disease (SCOT Trial). Blood Advances.

Giriraja et al. (2023) An open-label, multicenter, phase 2 study of a food enriched with docosahexaenoic acid in adults with sickle cell disease. Prostaglandins, Leukotrienes and Essential Fatty Acids.

All published and presented, peer-reviewed data is available upon request.

HOW SUPPLIED / STORAGE AND HANDLING

†Product #	Description	Size
83518-2400-30	ALTEMIA Commercial Product	30 packets per carton
83518-2400-03	ALTEMIA Professional Samples *NOT FOR SALE*	30 packets per carton

†LOBE Sciences, Ltd. does not represent this product code to be a National Drug Code (NDC) number. Instead, LOBE Sciences has assigned a product code formatted according to standard industry practice to meet the formatting requirements of pharmacy and health insurance computer systems.

Store packets at 20-25°C (68-77°F): excursions permitted between 15-30°C (59-86°F). [see USP Controlled Room Temperature]

Manufactured for:

Lobe Sciences, Ltd.

Vancouver, BC

V6E3T2

LOBE SCIENCES