Biotics Research's Superior Emulsified Products

Bio-Ae-Mulsion® supplies 5,000 IU/drop of vitamin A, (palmitate) in an emulsified form. Vitamin A has been found to be beneficial in immune depletion, as well as in cases associated with high levels of free radicals.

NPN #: 800019578

Bio-D-Mulsion® supplies 400 IU/drop of vitamin D_3 (cholecalciferol). Independent clinical experience suggests this emulsified form of vitamin D provides significant improvements in serum levels of 25-OH-vitamin D following supplementation.

NPN #: 80020888

Bio-D-Mulsion 1000 provides 1,000 IU/drop of emulsified vitamin D_3. Recent scientific evidence has indicated the physiologic requirement of vitamin D may be as high as 4,000 IU, which is less than half of the 10,000 IU that can be produced endogenously with just a few minutes of sun exposure. Both the peripheral and central nervous systems have sites of vitamin D action. It appears likely vitamin D modulates serotonin and melatonin synthesis and metabolism.

NPN #: 80007438

E-Mulsion 200® supplies 200 mg of emulsified vitamin E per tablet (d-alpha-tocopheryl acetate and mixed tocopherols), along with SOD and catalase. Vitamin E has proven results as an effective antioxidant and it potentiates the action of glutathione peroxidase via its action as a free radical scavenger, resulting in the prevention of lipid hydroperoxide formation. It has also shown to be effective in protecting the integrity of the cell membrane by means of preventing membrane lipid degradation.

NPN #: 80023303

CoQ-Zyme 30™ supplies an emulsified preparation of CoQ_{10}, (ubiquinone) which plays an essential role in energy production particularly with the heart and skeletal muscle. Daily ingestion of emulsified **CoQ-Zyme 30™** showed an increase in plasma CoQ_{10}, by 210%, which was equivalent to between 90-110 mg of dry, non-emulsified CoQ_{10}. Additionally, serum CoQ_{10} levels increased in 80% of the test individuals.

NPN #: 80007114

Bio-E-Mulsion Forte® supplies 30 IU/serving (5 drops) of emulsified vitamin E. A potient antioxidant, vitamin E also protects the fats in low density lipoproteins (LDL's) from oxidation. Oxidized LDL's have been implicated in the development of cardiovascular degeneration.

NPN #: 80021751

To place your order for Biotics Research's emulsions or for additional information please contact us:

BIOTICS® RESEARCH CANADA
"The Best of Science and Nature"

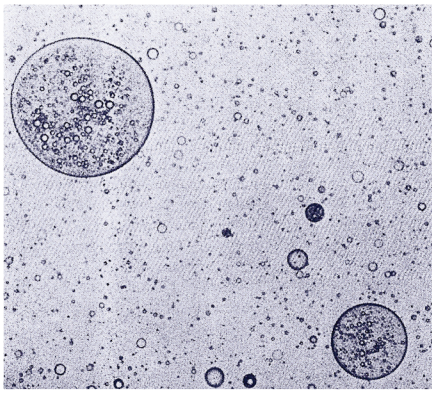
Biotics Research Canada • Toll Free: (800) 840-1676
Box 283 Keswick ON L4P 3E2
Email: orders@bioticscan.com
www.bioticscan.com

All Emulsions Are NOT Created Equal

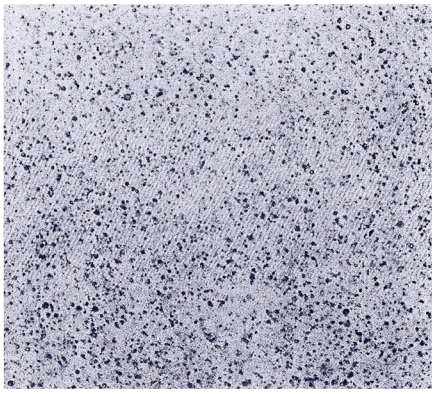
Experiments published in peer-reviewed nutrition journals have confirmed Biotics Research's emulsified fat-soluble vitamins:

- Possess the smallest particle sizes of commercial emulsions tested
- Have equal or greater uptake and bioavailability than micellized products
- Show significantly less toxicity than micellized preparations
- Are the most cost-effective form of fat-soluble vitamin supplementation

These results signify the beneficial effects of emulsified fat-soluble preparations, a result of over forty years of scientific literature.

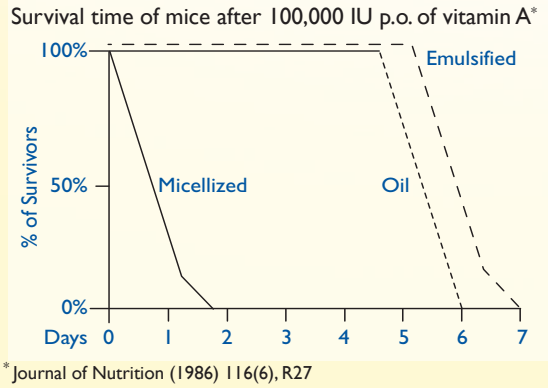


Competitors emulsified vitamin A product
Magnification 160x



Biotics Research's **Bio-Ae-Mulsion®**
Magnification 160x

- **CoQ-Zyme 30™**
- **E-Mulsion 200®**
- **Bio-D-Mulsion®**
- **Bio-Ae-Mulsion®**
- **Bio-D-Mulsion 1000**
- **Bio-E-Mulsion Forte®**



*Journal of Nutrition (1986) 116(6), R27

BIOAVAILABILITY OF EMULSIFIED AND MICELLIZED VITAMIN PREPARATIONS

Micellized vitamin preparations have appeared in the holistic market accompanied by claims of greater absorption into plasma than both oily and emulsified forms. However, four factors negate this supposed advantage.
FIRST, extensive basic and clinical research has shown that properly emulsified preparations are equal or greater in effectiveness than micellized preparations in tissue storage, utilization and biological effects.[1]
SECOND, blood levels of vitamins do not necessarily correlate with biological use.[2]
THIRD, rapid increases in blood levels of vitamins from micellization can overload the normal mechanism of vitamin transport and metabolism, resulting in toxicity and tissue damage from non-specific properties of vitamins.[3]
FOURTH, micellized vitamin preparations are two to five times more costly than oily or emulsified products, resulting in the lowest cost-effectiveness of all preparations.

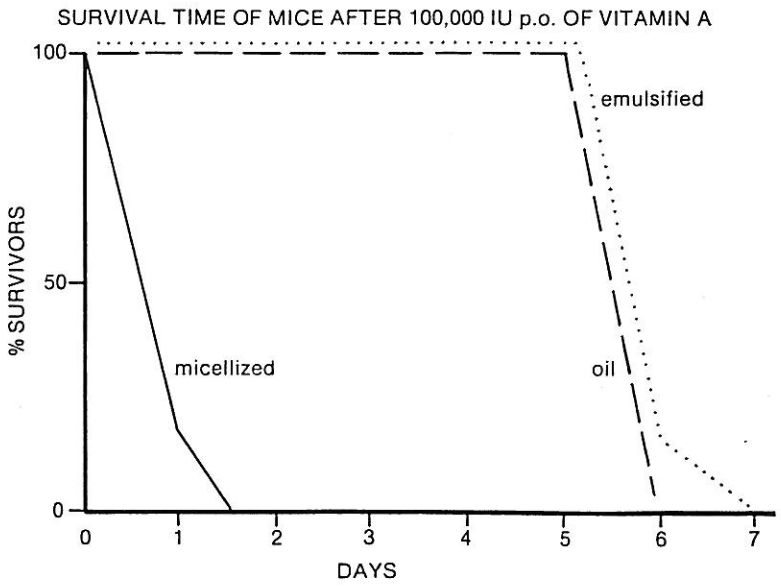
ALL EMULSIONS ARE NOT EQUAL. Some studies have shown increases in absorption and storage for micellized preparations when compared to oil- or emulsified forms.[4] The reason for relatively poor results of these emulsions was the large size of lipid droplets (some visible to the naked eye), reducing effectiveness to little better than oily forms.

Biotics Research emulsions have reproducibly exhibited the smallest particle sizes upon microscopic examination when compared to other emulsions.[5]

Biotics Research vitamin A emulsions were compared to commercial oily and micellized forms for bioavailability and uptake with the classical liver storage assay in mice.[6]

Emulsified vitamin A showed equivalent liver storage with micellized forms at low to moderate doses. At high doses, Biotics Research emulsions exhibited significant increases in vitamin A levels over oily and micellized forms.[5] In a separate experiment, much greater toxicity from micellized vitamin A was seen (Figure 1).[5]

FIGURE 1: (to the right) Survival of mice given an overdose (100,000 I.U.) of vitamin A palmitate orally on day 0.



In conclusion, recent experiments published in peer-reviewed nutrition journals have verified that *Biotics Research emulsified fat-soluble vitamins:*

1) possess the smallest particle sizes of commercial emulsions:
2) have equal or greater uptake and bioavailability than micellized products;
3) show much less toxicity than micellized preparations and
4) are the most cost-effective form of fat-soluble vitamin supplementation.[5]

These results reproduce and confirm the consensus of results from over 40 years of scientific literature.

References:

1 Ellingson, R.C., et al.:
Relative Effectiveness of Vitamins A & D in Oil and Water. Pediatrics (1951) 8, 107-116.

2 Smith, F.R. & Goodwin, D.S.:
Transport in Human Vitamin A Toxicity.
New England Journal of Med. (1976) 294, 805-808

3 Mallia, A.K., et al.:
Metabolism of Retinol-binding Protein & Vitamin A During Hypervitaminosis in the Rat.
Jour. of Lipid Research (1975) 16, 180-188.

4 Lewis, J.M., et al.:
Further Observations on the Absorption of Vitamin A. Pediatrics (1950) 5, 425-436.

5 Bucci, L.R. & Sparks, W.S.:
Comparison of Vitamin A Absorption from Commercial Oily, Emulsified and Micellized Products. Amer. Journal of Clinical Nutrition (1986) 43(6), #40. Journal of Nutrition (1986) 116(6), R.27

6 Embree, N.D., et al.:
Determination of Vitamin A. Methods of Biochemical Analysis (1957) 4, 43-98.

Journal of nutrition (1986) 116(6), R27

COMPARISON OF VITAMIN A ABSORPTION FROM COMMERCIAL OILY, EMULSIFIED AND MICELLIZED PRODUCTS

Luke R. Bucci* and William S. Sparks* (SPON: I. Wolinsky).
Biotics Research Corp., Houston, Tx 77236

Recent availability of micellized vitamin A preparations in health food stores with accompanying claims of superior absorption over other forms of vitamin A products prompted a study into comparative absorption and toxicities in mice. Emulsified vitamin A preparations showed a large variation of droplet sizes, with the most consistent chosen for assay. Liver storage in ICR male mice from doses of 100, 1000 and 10000 IU vitamin A palmitate per day per mouse from oily, emulsified and micellized forms was determined. Storage at doses of 100 and 100 IU/d was not different, but storage at 10000 IU/d was significantly increased for the emulsified form. A single, acute toxic dose of vitamin A (100000 IU per mouse) in each form was given, and time to lethality noted. All mice treated with micellized vitamin A developed severe diarrhea and died within 24 hours, while mice given oily or emulsified vitamin did not develop diarrhea and died within 48-72 hours. The implications for human toxicity are important, as ingestion of acutely toxic amounts of vitamin A by accidental overdose are more likely from micellized preparations than the other forms.

Biotics Research vitamin A emulsions were compared to commercial oily and micellized forms for bioavailability and uptake with the classical liver storage assay in mice.[6]

Emulsified vitamin A showed equivalent liver storage with micellized forms at low to moderate doses. At high doses. Biotics Research emulsions exhibited significant increases in vitamin A levels over oily and micellized forms.[5] In a separate experiment, much greater toxicity from micellized vitamin A was seen (Figure 1).[5]

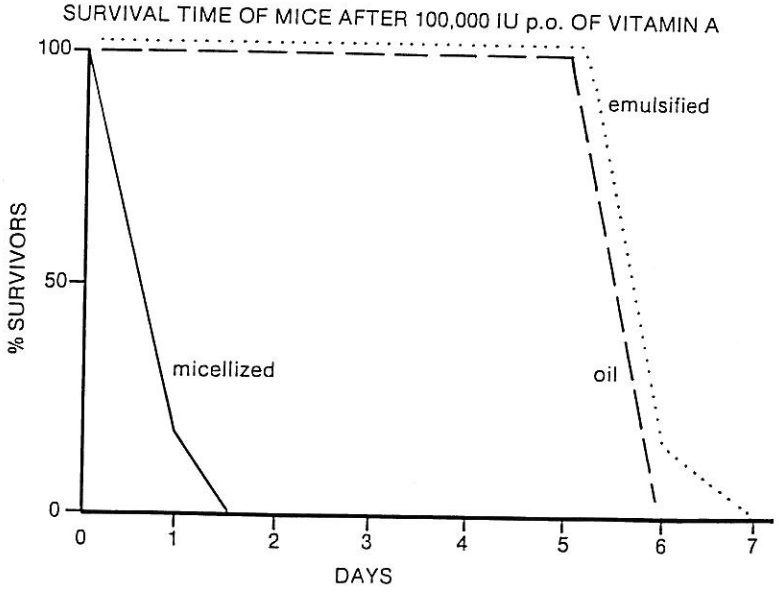


FIGURE 1: (to the right) Survival of mice given an overdose (100,000 I.U.) of vitamin A palmitate orally on day 0.

COMPARISON OF VITAMIN A ABSORPTION FROM COMMERCIAL OILY, EMULSIFIED AND MICELLIZED PRODUCTS. Luke R. Bucci* and William S. Sparks* (SPON: I. Wolinsky). Biotics Research Corporation, Houston, Texas 77236

Recent availability of micellized vitamin A preparations in health food stores with accompanying claims of superior absorption over other forms of vitamin A products prompted a study into comparative absorption and toxicities in mice. Emulsified vitamin A preparations showed a large variation of droplet sizes, with the most consistent chosen for assay. Liver storage in ICR male mice from doses of 100, 1000 and 10000 IU vitamin A palmitate per day per mouse from oily, emulsified and micellized forms was determined. Storage at doses of 100 and 1000 IU/d were not different, but storage at 10000 IU/d was significantly increased for the emulsified form. A single, acute toxic dose of vitamin A (one million IU per mouse) in each form was given, and time to lethality noted. All mice treated with micellized vitamin A developed severe diarrhea and died within 24 hours, while mice given oily or emulsified vitamin did not develop diarrhea and died within 48-72 hours. The implications for human toxicity are important, as ingestion of acutely toxic amounts of vitamin A by accidental overdose are more likely from micellized preparations than the other forms.