

Looking into Emu Oil

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The theme of the 2001 AEA Symposium was “...Meet a new Frontier...Catch the Spirit.” The new frontier was the opportunities identified in recent research on the biological properties of emu oil. This research targeted properties some already use to promote emu oil but evaluated in valid, controlled, quantifiable scientific studies. The report by the principal investigator on cholesterol lowering, anti-inflammatory and transdermal characteristics of emu oil served to validate to the scientific community that a new oil is available having functional and pharmaceutical properties.

Previously producers and marketers have relied principally on anecdotal or testimonial disclosures on the benefits of emu oil. Healing, penetrating, anti-aging descriptions have been used to promote our product. While perhaps actual, none have been based on characteristics proven by scientific studies. Few results until now have been reported in the scientific, peer reviewed literature that lends credibility to these often seen claims. Data has been developed that will pass the test of scientific scrutiny. Future efforts are targeted to reach the scientific community and eventually the users of this oil.

The principle investigator, Dr. Robert Nicolosi, University of Massachusetts, reported on animal trials that showed cholesterol lowering, anti-inflammatory and transdermal properties of emu oil. Dr. Nicolosi was selected to perform the emu oil studies because of his widely recognized publications on vegetable oils, sterols and lecithin. He has published more than 150 peer reviewed papers in many of the noted journals on nutrition.

Dr. Nicolosi holds teaching and research positions at the University of Massachusetts. He has been involved in identifying and quantitating the biological and physiological effects of various oils such as rice, corn fiber, sunflower, soybean and others. Dr. Bob is most noted for his identification of the active ingredients in oils having cholesterol-lowering effects. Illustrating the reluctance to accept claims for this oil, even Dr. Nicolosi (Dr. Bob) expressed doubts about the possible outcome in these trials. After all, isn't this just another animal fat being “packaged” with other “snake oils.

” The standard method to assay for cholesterol lowering activity is to feed animals a high cholesterol diet then to add the test material to the diet and determine serum cholesterol over a defined time (2 weeks, 4 weeks, etc.). Dr. Nicolosi fed hamsters a hypercholesterolemic diet followed by inclusion of emu oil. The emu oil fed was either a crude rendered oil or a fully processed oil. The results were incredible with emu oil reducing total cholesterol over 30%. Most of the reduction occurred in the bad cholesterol (low density lipoprotein [LDL] cholesterol -25%). Serum cholesterol is a major risk factor for heart disease and the leading cause of death in the U.S. It is essential that people make changes in lifestyle and diets to lower their cholesterol. Cholesterol lowering drugs are the major pharmaceutical products sold. Emu oil may be a very attractive alternative.

Inflammation is easily seen but more difficult to quantify. We've all seen how some people react very strongly due to contact with an irritant while others show little effect. In our trials the inflammatory response was quantitated using a standard irritant applied to the ear of mice.

Croton oil (2%) is the standard irritant and the degree of inflammation or anti-inflammation was determined by measuring auricular (ear) swelling and the weight of a plug taken from the ear. Swelling of tissue is a primary indication of inflammation. After the croton oil application (3, 6, 9, or 24 hrs.), emu oil was applied to the same area as the irritant. The thickness and earplug weights were then determined. The results were again “incredible.” The degree of inflammation was significantly reduced between 42% and 71% in the emu oil treated mice. The cytokines or those circulatory compounds produced as a result of inflammation, were also reduced significantly (-83% interleukin -1 and -66% tumor necrosis factor).

Several human and animal diseases are probably the result of inflammation. These include arthritis and vascular diseases. Treatment is often difficult but topical application has been explored. Substances that pass through the skin are needed. The claimed transdermal characteristics of emu oil were evaluated by topical application on hamsters of emu oil containing delta tocopherol. Different combinations of emu oil and tocopherol were evaluated (1:1, 5:1 and 10:1). These were applied to the shaved, dorsal surface of hamsters. Blood samples were taken at 1 hour, 1 day, 2, 3 and 7 days and submitted for plasma analysis of the tocopherol. The different dilutions of the tocopherol with emu oil showed a dose/response relation between plasma tocopherol and concentration. Emu was found to be transdermal carrying the tocopherol through the skin into the blood. When a long chain fatty acid, docosahexenoic acid (C22:6), was incorporated into emu oil, a similar transfer to the blood was seen. Together, these trials showed statistically that emu oil is transdermal and can be utilized for transdermal delivery. The component of emu oil that brings about the transdermal delivery to the blood is unknown.

One can visualize several possibilities as a result of these studies. Some of these may include: cholesterol control and subsequent reduction of cardiovascular disease through a friendly food ingredient or capsule of emu oil, topical treatment of inflammatory diseases such as arthritis or rheumatism, or efficient delivery of topical pharmaceuticals. Enhanced cosmetics and pharmaceutical formulations seem likely for both external and internal treatment perhaps even to targeting of specific organs.

What has not been done is the determination of the active ingredient or ingredients in emu oil that is responsible for the observations made in these trials. The future efforts should focus on the identification of active components in the oil. The determination of the effects of gender, feeds, location of oil and processing effects can then be determined and optimized. As Dr. Nicolosi had summarized at the annual meeting, “emu oil is not your normal chicken fat.” We can push forward into new opportunities with this beneficial livestock product with “further research that aims at specific new medicinal uses in everyday health-aid situations.”