

Biological Activity of Emu Oil

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Emu Oil is derived from the emu (*Dromaius novaehollandiae*), which originated in Australia. While many therapeutic benefits have been attributed to emu oil ranging from wound healing, antiinflammation as well as anti-bacterial and anti-viral activity, there have been no published reports of these benefits. This presentation will report of the cholesterol lowering, anti-inflammatory and transdermal delivery properties of emu oil.

For the cholesterol-lowering studies, hamsters were fed chow-based diets containing either 10% coconut oil or emu oil with 0.05% cholesterol for 4 weeks. Compared to coconut oil, hamsters fed emu oil had 25% lower levels of plasma non-HDL-C and a 27% increase in HDL-C ($p < 0.05$).

For the anti-inflammation studies, the auricular areas of mice were treated with either 2% croton oil (pro-inflammatory oil) or emu oil. Auricular thickness and ear plug weights were significantly reduced 42% and 71%, respectively, in the emu oil treated mice. The cytokines IL-1 and TNF-alpha from homogenates of ear tissue were also significantly reduced 83% and 66%, respectively relative to the croton oil.

For the trans-dermal delivery system studies, five topical applications of emu oil containing delta tocopherol at ratios of 1:1, 5:1, and 10:1 were applied to the shaved dorsal surface of hamsters. The 1:1 ratio of delta tocopherol to emu oil was also compared to stripped corn oil. At one hour, 1, 2, 3, and 7 days post-application, blood samples were taken for plasma analyses of delta tocopherol by HPLC. The different dilutions of delta tocopherol with emu oil applied topically showed a dose response reduction in plasma delta tocopherol. Compared to stripped corn oil, plasma from hamsters topically treated with emu oil had 2-4 times greater plasma levels of delta tocopherol suggesting more efficient trans-dermal delivery with emu oil. The active components of emu oil responsible for these biological activities remain to be determined.