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Omega 3 testing for skin health: A tool for personalized dermatology

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Omega 3 fatty acids play an important role in maintaining skin health and for its anti-inflammatory properties. Omega 3 fatty acid deficiency is associated with dermatological conditions such as acne, atopic dermatitis and psoriasis. However, most of the skin care products in the market today, do not incorporate omega 3 fatty acids and while omega 3 fatty acids are recommended in the diet for healthy skin, there is no clear guidance on the appropriate amount of omega 3 fatty acids needed for healthy skin. Moreover, inflammation which is elevated in most dermatological conditions and a concern for skin health is not usually measured. Numerous studies have demonstrated the importance of essential fatty acids especially the polyunsaturated omega 3 fatty acids – DHA (docosahexaenoic acid) and EPA (eicosapentaenoic acid) in heart, joint and brain health as evident in numerous clinical studies. The omega 3 index, which represents the amount of DHA and EPA as a percentage of the total fatty acids in red blood cells, has been accepted as a powerful biomarker for measuring cardiovascular health. Several clinical trials have shown that an omega 3 index greater than 8% is a good indicator of favorable cardiovascular health, while an index of 4% and below represents high risk. Knowledge of an individual's index facilitates direct intervention with omega 3 supplementation either through a diet of oily fish or fish/algal oil supplements. Recent studies indicate that a higher omega 3 indexes (10%) correlates to better insulin sensitivity, which has implications in a more favourable metabolic profile. To date, there is no recommended omega 3 index for skin health, although there are studies suggesting that higher intake of omega 3 fatty acids can alleviate acne, atopic dermatitis and psoriasis symptoms. The presentation will describe an improved dried blood spot technology that stabilizes the labile polyunsaturated fatty acids facilitating the measurement of an individual's omega 3 index from a few blood drops obtained from a simple finger prick with no need for refrigeration. This is much more cost-effective and convenient than the traditional method which requires whole blood obtained from an arm venipuncture and preservation of the blood in liquid nitrogen (-190C) prior to analysis. The technology is not limited to determining the omega 3 indexes but includes measurement of inflammation markers such as the omega 6:3 and AA (arachidonic acid)/ EPA ratios. The AA/EPA inflammation marker is upstream of the inflammation pathway regulating downstream, the commonly used inflammation markers (TNF-alpha, IL-6, C-reactive protein). Thus, AA/EPA ratio is a good marker for silent, chronic low-grade or subclinical inflammation. The described technology can facilitate the adoption of the omega 3 index in dermatology especially in its use in clinical trials. This should lead to a recommended omega 3 index targeted for skin health and represents a step towards personalized dermatology.

Speaker Biography

Leodevico (Vic) L Ilag is Chief Scientific Officer and has more than 20 years of biotech experience in the discovery and development of biologics and diagnostics serving in multiple senior executive roles in R&D and business development with several biotech companies in Australia and Europe.

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