BioInnovation Laboratories, Inc.



Research •Development •Testing In Vitro Testing •Molecular Biology •Biochemistry

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TEST RESULTS OF LIFT + PERFECT and LIFT+MOISTURIZE with AFPs (CPP)

In December 2012 and in April of 2013 LiftLab authorized two studies in my lab examining the biological effects of LIFT + PERFECT and LIFT+ MOISTURIZE incorporating the Cell Protection Protein materials (known in the literature as Antifreeze Proteins or "AFP"s). In the first study the impact of the AFPs on the proliferation of fibroblasts from various aged donors (neonatal, 33 years old and 52 years old) was examined. It was observed that while the AFP materials did not stimulate proliferation in neonatal cells they did significantly stimulate proliferation in fibroblasts obtained from both the 33 year old donor and the 52 year old donor. This proliferative effect increased as the donor age of the fibroblast increased. Since as cells age they gradually lose their proliferative ability the results from this study suggest that the AFP materials may be stabilizing the older cells such that some of the deleterious effects of aging are countered.

In addition to the fibroblast proliferation study, the AFP material was also tested for its ability to stimulate collagen and elastin synthesis in human skin using MatTek's in vitro full thickness skin tissue model. This skin tissue model is composed of human skin cells (fibroblasts and keratinocytes) which have been engineered to from a three dimensional model of human skin, with both dermal and epidermal layers. In this study topically applied lotion products containing AFP material were applied to the skin tissue and changes in collagen and elastin production were measured. The AFP material was observed to significantly increase both collagen and elastin synthesis. Since both of these components are essential elements in the extracellular matrix of the dermis and their production tends to decline with aging then the AFP materials are again potentially demonstrating the ability to prevent some of the aging related changes that occur in the skin.

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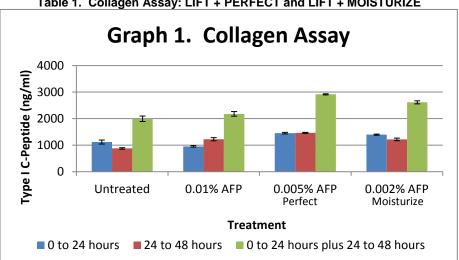
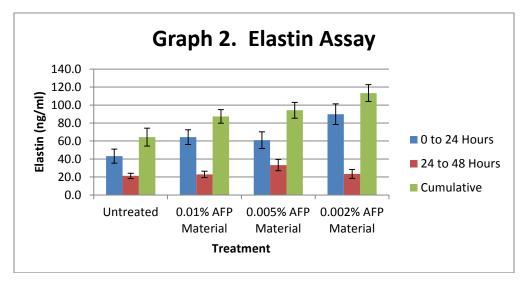


Table 1. Collagen Assay: LIFT + PERFECT and LIFT + MOISTURIZE

Table 2. Elastin Assay LIFT + PERFECT and LIFT + MOISTURIZE



DISCUSSION

Type I collagen synthesis was significantly influenced by all three materials at both the 24 and 48 hour time points. When the test material contained 0.01% AFP there was an initial decrease in collagen production within the first 24 hours, however during the second 24 hour period (24 hours to 48 hours) there was an increase in collagen synthesis such that over the 48 hour period the net collagen production was the same as the untreated group. However when the test material contained 0.005% AFP (LIFT+PERFECT) or 0.002% AFP(LIFT+MOISTURIZE) there was an increase in collagen production during both the first 24 hour treatment period and the second 24 hour treatment period. Thus both the collagen production in either 24 hour interval and the net cumulative collagen production over the 48 hour treatment period were significantly greater than the untreated group. When comparing these latter two test materials, the material containing 0.005% AFP appears to stimulate collagen more effectively than the 0.002% AFP material.

With respect to elastin synthesis all three concentrations of the AFP material were observed to be effective at increasing in elastin. All three materials displayed a significant increase in elastin synthesis during the first 24 hour period and in the total 48 hour cumulative elastin totals, however only the 0.005% concentration of the AFP material was effective at significantly increasing elastin synthesis during the second 24 hour period. The results of both the collagen assay and the elastin assay suggest that the 0.005% AFP concentration may be the most effective with regards to these two endpoints.