Research & Development Internship at USANA Health Sciences Inc.

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Background

USANA Health Sciences Inc. was founded in 1992 by Dr. Myron Wentz. USANA produces a wide variety of nutritional supplements, beauty products, and an energy drink.

Project Overview

- Research and develop enzyme linked immunosorbent assays (ELISA) for the detection of inflammation markers within the human body
- Research of fatty acids such as: eicosapentaeonic acid, docosahexaenoic acid, oleic acid, arachidonic acid, linoleic acid, α-linolenic acid, saturated and trans fats and their importance within the human body
- Develop the skills necessary to excel in a professional lab and business environment
- Refine assay/ lab techniques for future use

Research

![Image of a lab technician]

The figures shown above are the Molecular structure of several fatty acids in order of number of double bonds.

Results

![Graph of TNF-α ELISA assay]

The graph above is a typical standard curve for an ELISA assay. Isoprostanes are prostaglandin-like molecules that show promise as a marker for oxidative stress in humans.

![Graph of 8-isoprostanes ELISA assay]

The graph above is from a test performed on several reference standards for TNF-α. This served as a validation that the ELISA was indeed detecting the molecule of interest.

Data

<table>
<thead>
<tr>
<th>Subject</th>
<th>Rep #1 absorbance</th>
<th>Rep #2 absorbance</th>
<th>Average absorbance</th>
</tr>
</thead>
<tbody>
<tr>
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<td>-0.00345</td>
<td>-0.00345</td>
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<tr>
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<tr>
<td>DT</td>
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<td>-0.00455</td>
<td>-0.00405</td>
</tr>
</tbody>
</table>

The table above represents some of the data obtained when human plasma was tested using an ELISA for TNF-α. Absorbance (412 nm)

Conclusion

- A variety of fatty acids are essential to the human diet, however, some can be harmful in large quantities
- ELISA assays are a quick, efficient and reliable way to detect a number of molecules involved with inflammation in the human body
- An internship with USANA Health Sciences Inc. allowed me to exert myself more than I had ever in the past
- The knowledge and experience gained from the professionals at USANA is invaluable and will be useful for the entirety of my future career

Acknowledgements

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