

Fall 2015

## Bottled Benefits

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### Recommended Citation

Villano, Alex (2015) "Bottled Benefits," *Tigra scientifica*: Vol. 2 : Iss. 1 , Article 10.  
Available at: <https://tigerprints.clemson.edu/tigra/vol2/iss1/10>

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# Bottled Benefits

*Isolating exercise-related kinases in a cocktail to reap benefits without physical activity*



by Alex Villano

We encounter them everyday on sidewalks around town and in public gyms: exercisers. While their main goal may be to maintain their nice figure and fight obesity, those who are exercising are also maintaining good metabolism to try and prevent diseases such as type II diabetes. But, what if the time spent exercising could be put to other uses while still reaping the same benefits? Scientists have uncovered a pathway to bottling key products used by our muscles to maintain a healthy metabolism so that hours spent exercising can be spent elsewhere in life. In the October issue of *Cell Metabolism*, Dr. Nolan J. Hoffman, from the University of Sydney in Australia, and his colleagues describe a group of specific kinase proteins, functionally known as enzymes, and how they accumulate in muscle cells after exercise.

**“Scientists have uncovered a pathway to bottling key products...so that hours spent exercising can be spent elsewhere in life.”**

Faced with the challenge of finding which kinases promote the benefits of exercise in muscles, Hoffman’s team analyzed two muscle tissue biopsies from each male test subject: one prior to

the strenuous exercise routine and one following the routine. This experiment was made challenging by the numerous signaling pathways that are activated in a muscle cell during exercise, each of which may rely on different kinases. Such pathways include the integration of extracellular signals that allow the cell to produce particular proteins in response. The experiment led the scientists to the discovery of over 900 new sites in which kinases are activated within muscle cells, which may be responsible for the well-known metabolic benefits of exercise. While muscle responds to exercise with a series of kinases, it is not the only tissue within the human body that relies on kinases. Because of this, the study lays the foundation for future hypotheses that wish to investigate kinases and their respective signaling pathways occurring in other tissues.

Knowledge of such kinases in more tissues of the body will help to create a “cocktail” of these enzymes that Hoffman and colleagues hope can be bottled and sold to consumers to simply drink and consider themselves exercised. While some enjoy the post-exercise euphoria, a product such as this kinase mixture would make obesity and diseases such as type II diabetes a thing of the past for those who do not exercise on a daily basis. In a society that feels the pressure of time, this could help alleviate having to squeeze in time for exercise in such busy schedules. For those unable to exercise due to physical handicaps, this could be the answer to maintaining a healthy metabolism. The dawn of a new age is approaching to bottle the benefits of exercise without the sweat. Would you buy into it? 🐾

