

December 22, 2004

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3 pages via fax (513-627-1587) and U.S. postal mail

Dear Barbara:

This is in response to your letter dated November 19, 2004, regarding Iams' muscle atrophy experiment at Purdue University.

You argue: Iams "inten[ds] to use the mouse study at Purdue to help [Iams] understand the mechanism by which PUFAs [polyunsaturated fatty acids] protect from disuse atrophy, define the specific PUFAs that are most beneficial, and determine the optimal levels that should be in the diet."

Dr. Bruce Watkins, the primary investigator for this Iams-funded experiment, has *already* researched the effects of PUFAs on musculoskeletal biology in mice and come to the following conclusions: "Dietary n-3 PUFA mixtures significantly attenuated the loss of muscle mass associated with hindlimb elevation," and "[d]ietary n-3 PUFA attenuated the loss of bone mineral content associated with hindlimb elevation."¹

According to Dr. Watkins' "Bioactive Lipids and Bone Cell Formation—2004" (printed in the *Purdue Agricultural Impact*), a patent application has already been filed by Purdue's Office of Technology Commercialization [OTC] regarding "the use of these [nutraceutical fatty acids] to reduce the loss of muscle and bone that accompanies periods of disuse." Clearly, Purdue's OTC would not have filed a patent application on a product that had not already undergone extensive research.

Moreover, in Dr. Watkins' "Bioactive lipids and bone/muscle cell functions—2005" (also printed in the *Purdue Agricultural Impact*), Watkins states: "We have found that *specific* types of n-3 PUFA reduce the tissue loss in the animal model of hindlimb suspension. This research suggests that DHA [docosahexaenoic acid] might be essential for periosteum and bone growth" (*my emphasis added*). Thus, contrary to your claims, specific PUFAs have already been found for the attenuation of atrophy.

Watkins goes on to note the following: "The cooperating researchers have identified the function of n-3 PUFA that minimize the loss of muscle and bone (osteopenia) in an induced rodent model of hindlimb atrophy. The protective effects of these fatty acids appear to minimize inflammatory processes in muscle and bone tissues. These protective actions on reducing tissue atrophy are the result of altered prostanoid synthesis and direct effects on transcription factors and the COX-2 gene." This shows

¹ Please refer to <http://ww.efph.purdue.edu/media/IBOSBAWweb2004.pdf>.



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that contrary to your claims, Watkins has already found mechanisms by which PUFAs protect from disuse atrophy.

The bottom line is that performing more live animal research to figure out things that are already known is unnecessary and wasteful, not to mention inhumane.

You argue: “By obtaining these initial data in mice, we are able to limit the evaluations we need to ultimately conduct in dogs.”

This does not comply with Procter & Gamble’s “Refine, Reduce, Replace” policy, which instructs Iams to use fewer animals in its research whenever possible. This Purdue experiment should *only* be using dogs who are already suffering from the disease of interest (e.g., musculoskeletal atrophy), thereby targeting the ultimate consumer of the diet, minimizing the number of animals used in the research, avoiding the ethical dilemma of inducing disease in otherwise healthy mice, and sidestepping the oft-problematic issue of extrapolating data between different species.

In fact, in Dr. Roger Johnson’s Iams-funded experiment entitled, “Effects of Diet on the Initiation of Gingivitis,” Dr. Johnson argues the following: “The dog and cat have unique dietary requirements, which does not allow testing of these diets on other species, such as rodents. In addition, it seems reasonable to test these dietary formulations on the ultimate consumer of the diet, the cat and dog.” If such logic (to test only on the primary species of interest) applied in Dr. Johnson’s Iams-funded experiment, it’s reasonable to expect that the same logic should apply in Iams’ Purdue experiment.

You argue: “Currently there are no non-animal alternatives available to fully address these questions about PUFA mechanisms and the most beneficial types and levels of PUFAs. ... An artificial system cannot yet mimic the complexities associated with the biological effects of diet nor the ‘communication’ which happens between bone and muscle in the wasting process.”

These are false claims. I refer you to NASA’s “Gene Therapy: Putting Muscle Into the Research” in which Dr. Herman Vandenburg details his *in vitro* research, which Iams could easily adapt to suit its needs.

Vandenburg has developed a model for muscle atrophy using bioartificial muscles in his laboratory. Vandenburg explains that his team “can induce atrophy by reducing the tension on the muscle [using a force transducer]. ... The muscles generate less force, so they don’t make as much protein and they waste away.”²

He engineers the avian, mouse, rat, or human cells in a culture chamber, where they grow into muscle-like samples that are large enough to manipulate with his hardware. Vandenburg says, “The hardware is a self-contained, computerized system that allows [his team] to very precisely control the length of the bioartificial muscle down to the micron range. ... [His team has] a force transducer connected to one end of the bioartificial muscle [which] ... allows [them] to measure the actual force, or contraction, that the muscle can generate when [they] electrically stimulate it If the muscle is atrophying, that would be reflected in a decreased ability to generate force and do work.”

The article goes on to note that “[w]ith this hardware, Vandenburg will be able to test IGF-1 and get a better idea of how much of the protein is needed to stimulate new protein production and attenuate

²To learn more about Dr. Vandenburg’s bioartificial muscle technology, please visit <http://weboflife.nasa.gov/currentResearch/currentResearchFlight/geneTherapy.htm>.

atrophy in tissue grown from avian cells (a good model system for what happens in human and other mammalian cells) ...”

Vandenburgh is also using the bioartificial muscles in devices that are implanted subcutaneously as a living “little protein factory” that “deliver[s] proper dosages of the protein to the whole body for 6 months or more.”

In tests performed on rats who had their hind limbs suspended to induce atrophy, “[s]eventy percent of normal muscle wasting was prevented in rats [who] received growth factor through implants.”

The fact that the bioartificial muscles were able to thrive in a living system without being rejected reflects a high degree of similarity between bioartificial muscle and real muscle. Bioartificial muscle technology should be used by Iams as initial tests for effective PUFAs (instead of using live mice), followed by trials using dogs who have the specific disease of interest.

You argue: The muscle atrophy procedure “[is] not inhumane.”

Barbara, if you wouldn’t voluntarily undergo this procedure, nor subject dogs or cats to such research (according to Iams’ Global Research Policy), then *it is inhumane*. You’re simply rationalizing cruelty. The mice’s hind limbs are up in the air for seven long days, and then later on, the mice are killed. No reasonable person would find this to be “humane.”

Considering that all of your justifications for this muscle atrophy experiment at Purdue are woefully lacking in support, we call on Iams to immediately end its involvement in this study and instead pursue other humane research methods that we’ve described (e.g., bioartificial muscle technology, collaborative veterinary clinic studies using animals already presenting with the disease of interest).

Barbara, we urge you to strongly reflect on the issues raised in this letter and to work with us in shaping Iams into a more humane company. I hope that during the upcoming holidays, you’ll think of the animals being used in Iams’ experiments who have nothing to look forward to except more of the same—cramped cages, inadequate exercise and socialization, induced diseases, and death, in some cases.

May we please hear from you soon? If you have any questions, please feel free to contact me at ShalinG@peta.org or 757-962-8325. Thank you very much for your time.

Very truly yours,

A handwritten signature in black ink, appearing to read "Shalin D. Gala", written over a horizontal line.

Shalin Gala, Research Associate
Research & Investigations Department

cc: Mary Beth Sweetland
Wayne Pacelle
Ed Sayres