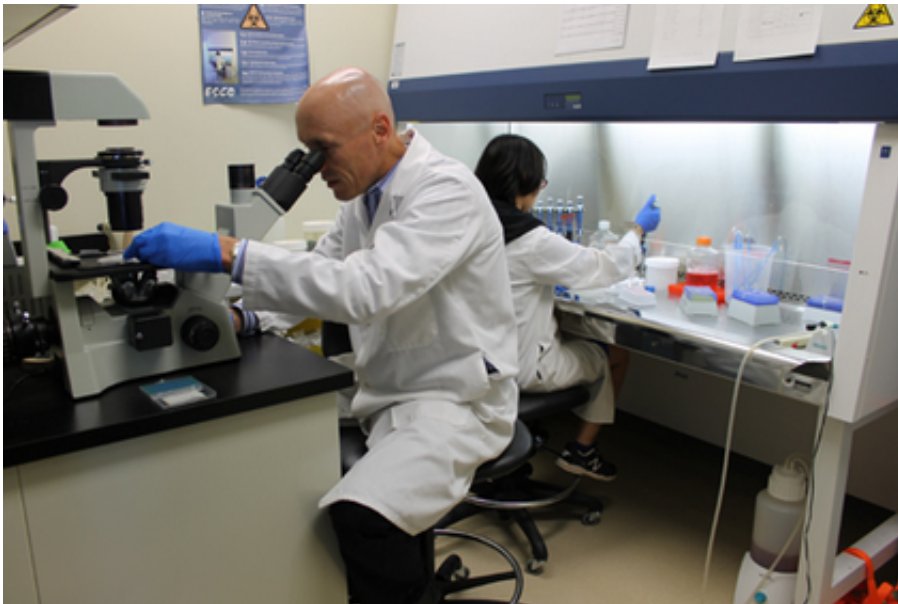


Team publishes evidence for natural alternative to antibiotic use in livestock

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Avivagen scientists working. Credit: Avivagen

Today the leading journal *PLOS ONE* published research that provides underlying scientific support for a fundamentally new type of natural alternative to the use of antibiotics in livestock feeds for growth promotion and disease prevention. The paper is the result of work by both independent and company scientists. Avivagen Inc. is a wellness company developing and delivering products that support and enhance the health and quality of life for animals and the people who care for them.

The discovery that the product formed by full, spontaneous oxidation of beta-carotene, termed OxC-Beta, can beneficially support immune function comes at a time when stakeholders across the globe, including national health regulators, are looking to avoid usage of antibiotics in livestock due to concerns they pose threats to public health.

In-feed trials of OxC-beta appear to be gaining attention from the livestock industry due to emerging evidence that this natural product may be a safe, effective and affordable alternative to antibiotics.

The peer-reviewed, scientific journal article detailing the biological activities of the fully-oxidized carotenoid technology is entitled "Biologically Active Polymers from Spontaneous Carotenoid Oxidation: A New Frontier in Carotenoid Activity." *PLOS ONE* is an international, peer-reviewed, open-access, online publication that reports on primary research from all scientific disciplines after rigorous peer review for technical soundness.

The article reports on the novel discoveries made by Avivagen scientists and collaborators about the biological activities of products obtained from the full, spontaneous oxidation of carotenoid compounds. Typical examples of carotenoids include common health and feed supplements such as beta-carotene, astaxanthin, canthaxanthin, lutein and lycopene.

Although carotenoids are popularly believed to act as antioxidants, Avivagen's discoveries bring to light the ability of these compounds to be totally transformed by spontaneous reaction with oxygen into entirely different [natural products](#) – fully-oxidized carotenoids such as OxC-beta – that appear to have beneficial effects upon [immune function](#). Of particular note is the previously unrecognized and predominant presence of oxygen-copolymer products that are believed to account for the majority of the immunological activity.

The *PLOS ONE* article describes the ability of OxC-beta to prime the immune system to more effectively respond to microbial challenges. Specific results on immune receptor levels, cytokine levels and phagocytic activity provide mechanistic and function-based evidence of OxC-beta-enhanced innate immunity. Furthermore, the article notes that the effects of fully-oxidized carotenoids may explain the epidemiological evidence for benefits from diets rich in carotenoid-containing fruits and vegetables and the corresponding lack of consistent efficacy from direct dietary supplementation with intact beta-carotene.

Dr. Graham Burton, Director Commercialization Science and co-founder of Avivagen is a co-author of the paper and commented "We're very pleased to have our manuscript published by *PLOS ONE*, which is one of the world's leading peer-reviewed journals. We believe the publication of this work confirms our assessment that Avivagen's discoveries may have important implications for animal and human health."

Cameron Groome, C.E.O. and President of Avivagen also commented "We believe peer-reviewed publications are important to Avivagen, as they help establish the scientific validity of our [products](#). We look forward to our team and collaborators publishing future manuscripts concerning the properties of OxC-beta and the benefits from its use in companion and livestock animals."

More information: The paper was authored by James B. Johnston, James G. Nickerson, Janusz Daroszewski, Trevor J. Mogg and Graham W. Burton. The article was published on October 31, 2014, and is available at <http://dx.plos.org/10.1371/journal.pone.0111346>.

Provided by Avivagen

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