



Ceapro Announces Data from Avenanthramides Study Presented at the Nutrition 2018 Meeting

- Results showed that oat avenanthramides supplementation reduce circulatory inflammation and inhibit expressions of chemokines and adhesion molecules -

EDMONTON, ALBERTA – June 13, 2018 – [Ceapro Inc. \(TSX-V: CZO\)](#) (“Ceapro” or the “Company”), a growth-stage biotechnology company focused on the development and commercialization of active ingredients for healthcare and cosmetic industries, announced that encouraging data from its study of avenanthramides in exercise-induced muscle inflammation were presented at the American Society for Nutrition’s inaugural flagship meeting, [Nutrition 2018](#), that was held at the Hynes Convention Center from June 9-12, 2018 in Boston, MA.

Tianou Zhang MD, MS, PhD Candidate, at the Laboratory of Physiological Hygiene and Exercise Science, School of Kinesiology at University of Minnesota, presented the abstract titled, “*Oat Avenanthramides Protects Against Eccentric Exercise Induced Muscle Inflammation in Human after Downhill Running*,” as a part of the Anti-Inflammation Effect of Dietary Bioactive Components session.

The objective of the study is to evaluate whether dietary avenanthramides supplementation could attenuate eccentric exercise-induced muscle inflammation. The study utilized avenanthramides, a group of di-phenolic acids found only in oats, providing antioxidant protection and inhibiting inflammation, and its effect on a series of inflammatory responses in skeletal muscles, exhibited as painful, red, and warm swelling activated by downhill running.

The study evaluated 24 subjects that were assigned to a high avenanthramides group or low avenanthramides group. Two treadmill-based downhill running sessions were separated by 8-week washout period followed by 8-week oat avenanthramides supplementation through receiving two cookies per day. Blood samples were collected before downhill running and at various time points (0 hours, 4 hours, 24 hours, 48 hours, 72 hours) after downhill running. Circulatory inflammatory cytokines Interleukin (IL)-6, IL-1Receptor antagonist (IL-1Ra) and chemokines Monocyte Chemoattractant Protein (MCP)-1, Vascular Cell Adhesion Molecule (VCAM)-1 were measured using Luminex multiplex assays. Data were shown as mean \pm SEM and analyzed using three-way repeated measures ANOVA.

Results of the study showed that 24 hours and 72 hours post downhill running, MCP-1 levels were decreased in the high avenanthramides groups compared to control groups, while VCAM-1 levels were reduced in high avenanthramide groups compared to control groups at 24 hours, 48 hours and 72 hours post downhill running. Inflammatory cytokine IL-6 were downregulated in high avenanthramide groups compared to control groups at 4 hours and 72 hours post downhill running, while anti-inflammatory cytokine IL-1Ra were upregulated in high avenanthramide groups compared to control groups in post downhill running and 48 hours post downhill running.

Ceapro concluded that oat AVA supplementation could reduce circulatory inflammation cytokines and inhibit expressions of chemokines and cell adhesion molecules induced by downhill running. Total circulatory immune cells were not affected by oat AVA supplementation, but AVA inhibited the activation and recruitments of these cells after downhill running. This activity on white blood cells is a novel finding showing that AVA interacts with immune system by reducing neutrophils/monocytes activation and such activation actually contributing to the muscle inflammation.

“We are honored that our data were selected for presentation at this prestigious scientific congress. Importantly, the results obtained from this initial study demonstrated a positive trend and will enable us to gain line of sight into the next phase of development for this program. With these results in hand, we believe we are now well positioned to conduct additional studies of avenanthramides with the goal of achieving proof of concept and supporting our proprietary product’s ability to have a significant impact on inflammation-based diseases,” commented Gilles Gagnon, President and CEO of Ceapro.



About the Nutrition 2018 Meeting

At Nutrition 2018, the top scientific researchers, practitioners, global and public health professionals, policy makers and advocacy leaders, industry, media and other related professionals will gather to advance nutrition science and its practical application. Nutrition 2018 offers the latest and best nutrition research, the opportunity to present research, network with peers, and touch and see the latest products and technology in the exhibit hall. Nutrition 2018 is an immersive nutrition experience offering the greatest minds in nutrition science, superior research, interactive exhibits, new technology, and boundless opportunities for networking in a welcoming environment. For more information about the American Society for Nutrition's inaugural flagship meeting, Nutrition 2018, please visit meeting.nutrition.org.

About Ceapro Inc.

Ceapro Inc. is a Canadian biotechnology company involved in the development of proprietary extraction technology and the application of this technology to the production of extracts and "active ingredients" from oats and other renewable plant resources. Ceapro adds further value to its extracts by supporting their use in cosmeceutical, nutraceutical, and therapeutics products for humans and animals. The Company has a broad range of expertise in natural product chemistry, microbiology, biochemistry, immunology and process engineering. These skills merge in the fields of active ingredients, biopharmaceuticals and drug-delivery solutions. For more information on Ceapro, please visit the Company's website at www.ceapro.com.

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