

Ceapro Inc. Announces Publication of Results for PGX-Processed Alginates in the *Journal of CO2 Utilization*

– Findings from the collaborative project with the University of Alberta illustrate broad potential of the PGX Technology to generate the next generation of bioactive delivery systems

– PGX Technology successfully transforms brown algae alginates into fibrils with 90x more surface area which provides significant opportunity to expand the Company's key commercial strategic assets

EDMONTON, ALBERTA – May 11, 2022 – [Ceapro Inc.](#) (TSX-V: CZO; OTCQX: CRPOF) (“Ceapro” or the “Company”), a growth-stage biotechnology company focused on the development and commercialization of active ingredients for healthcare and cosmetic industries, announced today that results from a collaborative project with University of Alberta researchers have been accepted for publication in the [Journal of CO2 Utilization](#) in an article titled, [“Drying of sodium alginate using Pressurized Gas eXpanded \(PGX\) liquid technology,”](#) authored by Liu Z, Couto R., Seifried B, Yépez B, Moquin P and Temelli F.

“This peer-reviewed paper originates from a prolific three-year collaborative project completed in April 2021 under the leadership of Dr. Feral Temelli at University of Alberta. This project has generated a wealth of data and insight which, to date, has resulted in two published articles, two University theses, one poster and nine oral presentations at international scientific conferences. Such an extensive screening program has enabled Ceapro to expand its pipeline and retain the most promising products, such as PGX-processed alginate as a stand alone and/or in combination with other bioactives like Co-enzyme Q10 to form new chemical complexes that can act as delivery systems under different forms of administration. While alginate is poised to become a key commercial strategic asset for the Company along with beta glucan from yeast, findings of this study illustrate the untold potential of the PGX Technology in generating the next generation of products enabling Ceapro to expand into a high-end Life Science company,” commented [Gilles Gagnon, M.Sc., MBA, President and CEO.](#)

From a technical standpoint, this study investigated the effect of PGX processing parameters on the physicochemical properties of sodium alginate (SA), a water-soluble polysaccharide from brown algae. Investigators also studied the effect of scaling up the PGX Technology while comparing it to other conventional drying technologies. It was found that the PGX Technology could effectively dry, purify and increase the surface area of SA while producing a unique fibrous morphology that cannot be obtained by any other conventional drying method.

The study compared PGX processed SA (PGX-SA) with SA dried using conventional spray drying and freeze-drying. The PGX-processed SA (PGX-SA) had an open-porous

structure with a delicate network of fibrils. This was dramatically different to the non-porous spherical spray-dried particles or the foam-like flaky freeze-dried material. In addition, the PGX-SA was white and formed colourless solution while the other drying methods maintained the yellow/brown color of the initial SA leading to light yellow/brown coloured solutions.

“Upon quantifying the specific surface area, we were delighted when we found that the PGX Technology had increased it by 90 times compared to the conventionally dried SA,” reported Dr. Bernhard Seifried, Senior Director Research & Technology of Ceapro. “The large specific surface area and unique fibrous morphology makes PGX-processed SA ideal carriers for bioactive compounds or to improve dispersion of hydrophobic materials in an aqueous system.”

The PGX-SA generated in the study did not only have more surface area than the raw conventionally dried SA, but it also proved to have a highly ordered open-porous structure that was also more thermally stable. The study also revealed that the molecular weight of the SA was not affected by the PGX processing given the mild PGX processing conditions.

This study also included scale-up work. Physicochemical properties and the delicate open-porous interconnected network structure of fine polymer fibrils produced at both scales were identical thereby showing that the PGX Technology can be scaled up to larger flow rates.

About Pressurized Gas eXpanded Liquid Technology (PGX)

Ceapro's patented Pressurized Gas eXpanded (PGX) Technology is a unique and disruptive technology with several key advantages over conventional drying and purification technologies that can be used to process biopolymers into high-value, fine-structured, open-porous polymer structures and novel biocomposites. PGX Technology is ideally suited for processing challenging high-molecular-weight, water-soluble biopolymers. It has the ability to make ultra-light, highly porous polymer structures on a continuous basis, which is not possible using today's conventional technologies. PGX Technology was invented by Dr. Feral Temelli from the Department of Agricultural, Food & Nutritional Science of the University of Alberta (U of A) along with Dr. Bernhard Seifried, now Senior Director of Engineering Research and Technology at Ceapro. The license from U of A provides Ceapro with exclusive worldwide rights in all industrial applications.

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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