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# Ceapro Provides Update on PGX Drying Technology

## - Game-Changing Technology with wide applications for global Bio Industry

EDMONTON, ALBERTA -- (Marketwired) -- 06/12/14 -- Ceapro Inc. (TSX VENTURE:CZO) As a follow-up to the general presentation made during the Shareholders meeting held on June 11, 2014, ("**Ceapro**" or "**the Company**") is pleased to provide a corporate update with respect to its Pressurized Gas Expansion (PGX) drying technology recently in-licensed from the University of Alberta.

This technology was originally of interest to Ceapro to enable the transition to other sectors like nutraceuticals and pharmaceuticals which mostly require the production of dry formulations for tablets and capsules presentations. First experiments were conducted with Ceapro's value driver beta glucan currently extracted from oat with the expectations that dry formulation of oat beta glucan would provide several benefits for Ceapro's existing and new market potential.

Benefits for the existing personal care market include being able to make preservative free product, an increase in shelf life, and a 98% reduction in shipping weights and associated greenhouse gasses by removing the water. A dry formulation would also allow Ceapro to pursue the large nutraceutical and functional food/drink markets where oat beta glucan has a well known health claim for cholesterol reduction. Unfortunately current standard drying technologies like spray drying or freeze drying are not feasible options for oat beta glucan, as well as many other biopolymers. A new technology was then needed, and that new technology is PGX.

Ceapro has been scaling up and refining the drying process to increase efficiency and reduce costs since it began working with the technology in 2010. All the equipment was designed and tested by Ceapro. In late 2013 Ceapro scaled up the technology and achieved a flow rate in excess of 3 metric tonnes per day with the potential to increase the rate to 5 metric tonnes per day. During the scale up work, Ceapro was able to produce a dried product that was in excess of 90% purity and was able to prove the flexibility of this technology to produce dried products of different morphologies including fine powders, granules, micro-fibrils, and nano-scale aerogels. Ceapro was able to produce an optimum dry formulation for the production of tablets and capsules according to pharmaceutical standards. The stage is set for further pre-clinical studies.

As a result of the success with the Ceapro beta glucan scaleup, a decision was made to invest in a commercial drying skid which will be capable of handling all of Ceapro's current oat beta glucan requirements as well as providing additional capacity to seed new market

opportunities and demonstrate the technology, at commercial scale, on other biopolymers.

### MIT Impregnation Study

Ceapro recently commenced a technical study with the prestigious Boston based Massachusetts Institute of Technology (MIT). The objective of that study being to impregnate molecules onto its dry beta glucan. The rationale being that beta glucan has been hypothesized to act as a delivery system and is based on evidence that the PGX technology can allow impregnation of molecules as previously demonstrated with the impregnation of beta-carotene into gum arabic.

The first target molecule was CoQ Enzyme 10, a well known health ingredient. The study was a success and proved that beta glucan could be well impregnated. While the work has not included any molecular characterization or efficacy testing yet, this study demonstrated the tremendous platform potential of the PGX technology to allow Ceapro to develop new products with any number of carriers and active molecules. With respect to beta glucan specifically, we can now look at expanding the use of beta glucan as a delivery system for topical applications given the demonstrated properties of beta glucan to deeply penetrate the skin down to the derm level. Also, upon completion of bioavailability studies, oral combination of active ingredients impregnated with beta glucan will be considered for time release applications. While this work is still early stage, the technical success is an essential first step to ensure we can make a product. With that in mind, further scientific and efficacy studies will be conducted. "The results of this first impregnation study with this enabling technology is very exciting and opens up many opportunities to develop new products and superior formulations for the pharmaceutical and nutraceutical sectors, in line with our stated goals", said Gilles Gagnon, President and CEO of Ceapro.

### Other Drying Tests

During 2014, the PGX platform was tested on other compounds to see how the resulting products would work with the technology. The primary intent of this test was to establish the broad application potential of PGX to effectively dry challenging biopolymers and allow for particle morphologies that offered the potential of enhanced performance. Two tests were conducted at Ceapro's lab on materials provided by third parties and both tests proved highly successful. The first one was conducted on chitosan, a well known compound used for wound healing that is most commonly extracted from shellfish. The second test was conducted on nano-crystalline cellulose (CNC), a product which is the focus of much research and development by the forest industry. This CNC product has some tremendous properties but faces drying challenges using current technologies that limits the functionality of the dried product. The ability of PGX to make a nano-particle aerogel product, something not possible with traditional spray drying, may allow for this product to be commercialized with its full potential.

In summary, the ability of PGX to potentially work and add value for other industries who face drying challenges with their biopolymers and biomaterials allows for Ceapro to consider out licensing PGX to third parties and adds to the tremendous potential upside of Ceapro.

### Bio World Congress of Industrial Technology (BWC)

Dr. Bernhard Seifried from Ceapro presented the PGX technology at the BWC on May 14

2014 in Philadelphia. This is the largest conference in the world that focuses on the rapidly growing bio-industrial sector that includes alternative fuels, bio-based chemicals, and bio-materials. The presentation was well attended and the technology and samples were of tremendous interest to several multi-nationals who had needs for better performance materials and drying solutions. It is anticipated that several of these meetings will lead to mutually beneficial business opportunities for Ceapro as PGX appears to be able to address certain unmet needs. We are most encouraged by the comments of a representative of a large US based organization after the presentation, "This technology is a winner".

#### Website Update

Because of the huge potential that PGX represents to Ceapro, we have added a separate PGX section on our website which can be accessed at [www.ceapro.com](http://www.ceapro.com). We encourage readers to review the information and fact sheet posted to learn more about this game changing technology.

"We have a new manufacturing facility coming on stream, sales forecasts suggesting record volumes, increased awareness of our flagship avenanthramides products, and now the tremendous promise of PGX. This is an exciting time for Ceapro's shareholders", added Mr. Gagnon.

#### ***About the Technology***

This Technology was invented by Dr. Temelli from the Department of Agricultural, Food & Nutritional Science of the University of Alberta along with Dr. Bernhard Seifried, now Senior Researcher at Ceapro.

The technology is called "PGX Technology", a novel spray drying technique for processing water-soluble biopolymers, including oat beta glucan, utilizing the unique and tuneable properties of Pressurized Gas eXpanded liquids. PGX Technology is a platform that can produce numerous morphologies of biopolymers ranging from fine fibres to granular powder, which are highly water soluble and could find commercial success in a wide range of industries including functional foods, nutraceuticals, cosmeceuticals, and pharmaceutical products. This technology operates at lower temperatures than conventional spray drying allowing incorporation of thermosensitive bioactives as well.

#### ***About Ceapro Inc.***

Ceapro Inc. is a Canadian growth-stage biotechnology company. Primary business activities relate to the development and commercialization of active ingredients for healthcare and cosmetic industries using proprietary technology and natural, renewable resources. To learn more about Ceapro, visit [www.ceapro.com](http://www.ceapro.com).

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