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Contribution ID: 3238 Type: **Oral Competition (Graduate Student) / Compétition orale (Étudiant(e) du 2e ou 3e cycle)**

## **(G\*) Using Phytoglycogen as an Agent to Improve the Water Solubility of Bioactive Compounds**

*Wednesday, 8 June 2022 14:30 (15 minutes)*

Phytoglycogen (PG) is a compact, dendrimeric and naturally occurring polysaccharide produced in the kernels in sweet corn. PG is soft, porous, bioavailable and nontoxic which makes it ideally suited for applications in human health and nutrition. In the pharmaceutical field, many newly-introduced drugs suffer from poor water solubility and the enhancement of their bioavailability is a major challenge for the industry. Recently, nanotechnological approaches such as emulsification and encapsulation have been proposed as techniques to improve drug solubility. We explore means to improve the solubility of the insoluble carotenoid astaxanthin (ASX) via PG. We have developed a technique that incorporates roto-evaporation and freeze-drying to create a dehydrated ASX-PG powder which is readily dispersed in water and creates stable solutions of ASX in concentrations several orders of magnitude beyond what is naturally seen in water. We use ultraviolet-visible spectroscopy (UV-VIS) to characterize the activity of the ASX solutions and surface plasmon resonance imaging (SPRi) to quantify the degree of binding between the ASX and PG. Our preliminary work shows promising results that PG is a safe, natural and effective solubilizing agent for the insoluble ASX.

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