

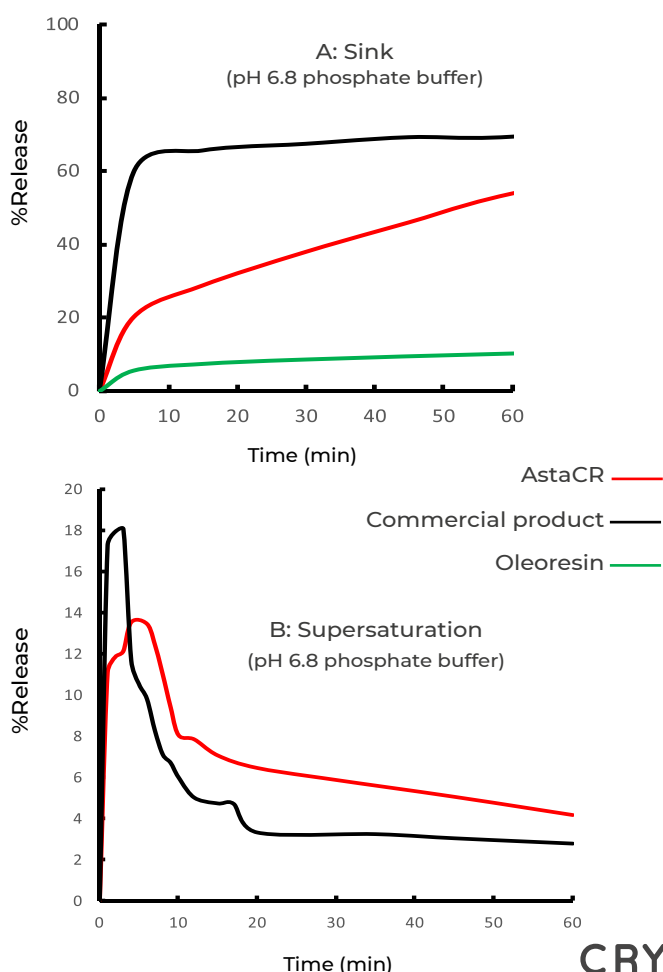
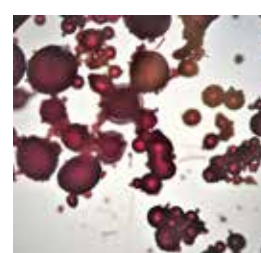
Astaxanthin

Astaxanthin (ASX) is a potent antioxidant, 10 times stronger than lutein and β -carotene. It has been found effective in diabetes, cardiovascular disease, some types of cancers, gastric ulcers, and as skin protectant against UV rays. It is a highly lipophilic, symmetric ketocarotenoid esterified with organic acids. ASX is widely distributed in nature, and mostly sourced by extraction from *Haematococcus* microalgae, and as byproduct of crustaceans food processing.

Its use as a food supplement is limited by its very poor aqueous solubility and low stability to light, oxygen, high temperatures and extreme pHs. The combination of poor solubility and instability underlies astaxanthin scarce oral bioavailability.

AstaCR

AstaCR is a fine powder of intense red color, formed by regularly shaped microspheres, easily dispersible in water. The microspheres are composed of selected lipid excipients and 50% algal biomass extract equivalent to 5% ASX.



AstaCR formulation is designed to release ASX almost at a linear rate. Our dissolution studies in “sink” conditions at intestinal pH (phosphate buffer, pH 6.8) show that after 30 and 60 minutes **AstaCR** releases 38% and 54% of its content respectively. The commercial product instead releases 60% of its ASX content already in the first 5 minutes from its contact with the dissolution medium.

“Supersaturation” kinetics are indicators of the capability of microspheres formulations to maintain the active molecule in solution, thereby keeping it accessible for absorption.

Dissolution studies in “supersaturation” conditions, show that once ASX is released from **AstaCR** microspheres, it remains dissolved at higher concentrations and for longer periods of time than the commercial product. These results suggest that **AstaCR** may potentially be more “bioaccessible” than the commercial product.

CRYO X PAND
Technology

SITEC applies its cryospraying technology to formulate natural extracts by encapsulation into lipid/amphiphilic microparticles with high bioactive load and favorable dissolution profiles.

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