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P.II.6 — Supercritical CO_2 extraction of astaxanthin from *Faxonius limosus* shells: a valorisation approach

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Poster Presentations #32

P.II.6 — Supercritical CO_2 extraction of astaxanthin from *Faxonius limosus* shells: a valorisation approach

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Faxonius limosus is an invasive alien species that was first recorded in Serbia in the Danube River near Apatin in 2002 and has continued to spread rapidly since then. As it poses major invasive potential due to its ability to carry crayfish plague, which is lethal to native crayfish species, there is an urgent need for measures to control its spread. One potential approach is the valorisation of its shell through the recovery of high-value bioactive compounds such as astaxanthin. Following meat separation, a considerable amount of shell remains as a by-product, representing a potential source of valuable compounds. In this study the potential of supercritical fluid extraction (SFE) for astaxanthin recovery from *F. limosus* shell was investigated. After the meat separation, the shells were dried at 50 °C for 16 h (2 × 8 h) ground and subsequently milled. The milled material was further pretreated using a bead beater to improve astaxanthin recovery. Astaxanthin was extracted by supercritical CO_2 extraction using a laboratory-scale high-pressure extraction plant. The extraction temperature (40, 50 and 60 °C) and CO_2 flow rate (0.2, 0.3 and 0.4 kg/h) were varied, while the pressure was kept constant at 400 bar. The highest astaxanthin concentration (125.22 µg/g) was obtained at 60ºC and a CO_2 flow rate of 0.4 kg/h, while a comparable concentration (124.75 µg/g) was obtained at 60 °C and 0.2 kg/h. These results demonstrate the potential of SFE for the recovery of astaxanthin from *F. limosus* shell and support its valorisation as a valuable source of this carotenoid. Further research should focus on optimising the extraction conditions and developing an appropriate encapsulation technique to improve astaxanthin stability.

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