KN2

Practical aspects of processing high value lipids using supercritical fluids

Owen Catchpole*, Stephen Tallon, Teresa Moreno, Fernando Montanes

Callaghan Innovation, 69 Gracefield Road, Lower Hutt, New Zealand
* Owen.Catchpole@callaghaninnovation.govt.nz

The scale-up of processing technologies to a pilot, demonstration and commercial scale presents a range of problems that are not apparent in lab scale trials. We present some practical and generally low cost solutions to some processing problems encountered in the extraction and fractionation of high value lipids that have been carried out to at least a pilot scale. The case studies presented include the continuous packed column fractionation of shark liver oils to produce squalene as the main extract, the immobilized enzyme catalysed fractionation of polyunsaturated oils to make omega-3 and omega-6 concentrates, the extraction of phospholipid-rich marine oils using CO_2 + ethanol; and the extraction of phospholipid-rich products using dimethyl ether (DME). The respective problems to be resolved and solutions that were developed and demonstrated were retrofitting an extraction plant and recovering raffinate and extract samples (shark liver oil); making a continuous and high throughput process (enzyme fractionation), recovery and re-use of ethanol (co-solvent process) and the reduction in venting time, solvent residues in spent solids (DME extraction).