MO183 The Nutritional-Toxicological Conflict Associated with Antarctic Krill Oil Dietary Supplements vs. Fish Oil Alternatives

S.M. Bengtson Nash, Griffith University / Southern Ocean Persistent Organic Pollutants Program SOPOPP; P.D. Nichols, Commonwealth Scientific and Industrial Research Organisation CSIRO / Marine and Atmospheric Research; M. Schlabach, Norwegian Institute for Air Research. Fish are a nutrient-dense food source. The role of marine-derived, long-chain (LC) \( \omega-3 \) fatty acids, in particular docosahexaenoic acid (DHA) and eicosapentaenoic acid (EPA), in the promotion of health is well established. Accordingly a host of international agencies recommend consumption of fish at least twice a week. Modern diets in developed nations are however characterised by severe LC \( \omega-3 \) deficiency, reflecting low seafood intake. In fact, it must be considered that meeting health targets for seafood intake is not economically, nor ecologically attainable for large fractions of the global population. In the absence of sufficient high quality, affordable seafood sources, dietary supplements are pitched to play a role of increasing strategic importance. A new nutriceutical oil derived from Antarctic krill (Euphausia superba), has recently been launched on the seafood-oil market. Marketing is based on three key promotional statements, namely; the improved bioavailability of krill oil \( \omega-3 \), the sustainability of krill fisheries and, finally, that krill are free of toxins and pollutants. Persistent Organic Pollutants (POPs) are ubiquitous, toxic and bioaccumulative contaminants and the vast majority of human exposure to POPs occurs via seafood consumption. In the case of fish oil dietary supplements, the situation is even more acute. Legacy POPs are lipophilic and accumulate in the lipid reserves of animals. When the lipid fractions of fish oils are selectively isolated and concentrated for administration as dietary supplements or complementary medicines, the fish oil micronutrient:POP burden conflict is exacerbated. Here we evaluated the nutritional quality and the contaminant burdens of Antarctic krill oil versus nine other fish oil dietary supplements readily available on the Australian market. All products adhered reasonably well to manufacturer DHA and EPA specifications and no products, at the maximum recommended dose, came close to fulfilling the contaminant tolerable daily intake (TDI) values assigned by international regulatory authorities. Contaminant profiles of Antarctic krill oil were distinct from other products, although not consistently lower. These results provide much needed quantitative data for a rapidly expanding new product in the fish oil market sector and in particular for the krill fishing industry.