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## **Differential mobilization of fatty acids from blubber to blood during the post-weaning fast of northern elephant seals (*Mirounga angustirostris*)**

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The northern elephant seal (*Mirounga angustirostris*) is characterized by extended terrestrial fasting periods corresponding to breeding, lactation, moulting and post-weaning. During the post-weaning fast, pups mobilize primarily lipids from their large adipose tissue stores, to prevent protein catabolism and extend the developmental fast. In order to study the fatty acids (FAs) composition of different compartments throughout this period, serum samples and biopsies extending the full depth of the blubber layer were longitudinally obtained from 22 pups captured at 1-, 4-, 7- and 10-week post-weaning. Inner and outer blubber layers were analysed separately. Medium-chain monounsaturated FAs (< 20C) (MC-MUFA) were dominant in the inner and outer blubber as well as in the serum over the studied period. Saturated FAs (SFA) were found in the next highest proportion, followed by  $\omega$ -3 polyunsaturated FAs (PUFA). The major FAs (> 1% by mass) represented more than 95% of the measured FAs in the 3 targeted compartments, the 2 main FAs being 18:1n-9 and 16:0. SFA and  $\omega$ -3 PUFA were particularly well mobilized from inner blubber throughout the fast, followed by MC-MUFA and  $\omega$ -6 PUFA. On the contrary, long-chain monounsaturated FAs ( $\geq$  20C) tended to be conserved within the blubber. FAs with a high fractional mobilization are 20:5n-3, 16:0 and 16:1n-7. Their proportions decreased within inner blubber between early and late fast. On the contrary, the proportion of 20:1n-9 rose in inner blubber between early and late fast, as a result of its low mobilization rate from this compartment. The kinetics of FA mobilization were similar to that observed in other phocids as well as terrestrial mammals.