

FATTY ACID MOBILISATION IN LACTATING WEDDELL SEALS: IMPLICATIONS FOR SELECTIVE TRANSFER

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The acquisition of prey is a fundamental determinant of the individual and population performance of Antarctic marine predators. However, data describing prey distribution and community structure that drive predator behaviour and reproductive output are rare. The examination of surrogate indices of prey availability can provide a wealth of indirect information for the measurement of a population's response to changes in prey composition. Fatty acids (FA) are stored in the adipose tissue and serve as building blocks for cell membranes and as energy storage for the body. The selective release of FAs during fasting periods may be an important mechanism by which essential FAs are made available to the body. In addition, selectivity of mobilisation may be influenced by life-history stages such as lactation, and transfer may have significant implications for the condition of young. We examined differential mobilisation and transfer of FAs during lactation for Weddell seals (*Leptonychotes weddellii*) in two years where maternal expenditure, offspring mass and condition differed significantly. Blubber samples were collected at post-parturition (PP) and end-lactation (EL) in 2002 and 2003, and milk samples were collected at PP, mid-lactation (ML) and EL in 2003 only. Twenty-four individual FAs (comprising 94–98 % of the total FAs) were found in greater than trace amounts. Short-chain monounsaturated FAs (≤ 18 carbons; SC-MUFA) dominated both the blubber and milk, with saturated FAs (SFA) the next highest in proportion. FA composition of the milk differed between each stage of lactation and showed selective transfer of certain fatty acids. FA compositions of the pups at EL differed between the two years, while FA compositions of adult females did not. This may indicate selective transfer of different FAs in each year, or supplemental feeding during lactation by the females. These results demonstrate that differences do occur in FA transfer during lactation. These differences translate to changes in pup FA composition at weaning which may affect condition and have potential consequences for future survival and recruitment into the population.