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THE COMPOSITION OF MILK OF THE NEW ZEALAND SEA LION (*PHOCARCTOS HOOKERI*)

A THESIS IN FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTERS OF SCIENCE IN ZOOLOGY AT MASSEY UNIVERSITY NEW ZEALAND

EMILY S.WEEKS

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Abstract

The composition of milk collected from 321 New Zealand sea lions (*Phocarctos hookeri*) found on the Auckland Islands during January and February in 1999, 2000, 2001 and 2002 were examined. The mean composition of milk was 21.7 % fat, 9.97% protein and 31.97% total solids. The milk composition varied significantly from 1999 to 2002. The average fat percentage decreased each year from 24.08% in 1999 to 11.02% in 2002. Protein percentages fluctuated each year from 8.36% in 1999, 11.07% in 2000, 10.57% in 2001 and 9.14% in 2002.

Once the milk composition was determined additional biochemical tests were performed on the same milk samples. A total of 17 sea lion samples were selected for fatty acid analysis. These samples indicated that N.Z. sea lion milk consists of primarily mono-unsaturated (47%) and saturated (34%) fatty acids. The most prevalent fatty acids found in the milk included C18:1n-9 (26.28%) and C16:0 (22.5%).

Lastly, thirty-one samples were selected for protein analysis. Preparative methods for bovine milk using gel electrophoresis, with dilution alterations accommodating total protein percentages proved adequate for the separation of whey and caseins found in N.Z. sea lion milk. These samples were compared to bovine indicated that Alpha, beta and kappa caseins had molecular weights around 2300 and beta and alpha lacto-globulin whey proteins had molecular weights around 1800. Proteins comprise approximately 10% of the total milk composition, 36.04% of which are caseins and 29.26% were whey.

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