This study investigated the effects of lactation stage (early, mid and late) and number of lactation times (1 to 7) on the mineral composition of pooled and individual NZ sheep milk samples. The distribution of the minerals in the cream, skimmed milk and whey fractions of sheep milk was also investigated. A total of 41 minerals were determined using an Agilent 7500 cs/ce Quadrupole Inductively Coupled Plasma Spectrometry (ICP-MS). Calcium (Ca, 1690±429 and 2031±381 mg/kg fresh weight), phosphate (P, 1280±279 and 1588±215 mg/kg fresh weight), potassium (K, 1274±273 and 1079±193 mg/kg fresh weight), sodium (Na, 477±193 and 719±207 mg/kg fresh weight) and magnesium (Mg, 178±48 and 266±57 mg/kg fresh weight) were found to be the most abundant minerals in both pooled and individual sheep milk samples.

Wide variation in the mineral contents was found in the pooled samples and did not trend with lactation stage. In the pooled samples, there was a trend of decreased content of Ca, P, K, Fe, Iodine (I) and copper (Cu) with an increase in the number of lactations, especially at > 5 lactations. The levels of Ca, P and selenium were present in the following descending order; skimmed milk > cream > whey based on fresh weight (mg/kg). The cream fraction had the highest zinc (7.3 ± 8.2), iron (1.3 ± 0.7), caesium (0.2 ± 0.05) and lowest K (657 ± 186) and Na (282 ± 105) contents. Appreciable amounts of minerals were found in the whey fraction. For example about 467 ± 64, 517 ± 111, 1347 ± 237, 1257.8 ± 115.5, 131.2 ± 13.4, 1.5 ± 2.2 mg/kg fresh weight of Ca, P, K, Na, Mg, and Zn, respectively, were found in the whey. This information is important in relation to consideration of the nutritional value of various sheep milk fractions.