**Table 1.** Sheep milk, cow milk, modified-AIN-93M diet, and Low Ca/P modified-AIN-93M diet mineral compositions as determined by ICP-MS $^{\%}$

| Diet component | Basal | | Milk | |
|---|---|---|---|---|
| Element | Modified-AIN-93M [µg/kg] | Low Ca/P modified-AIN-93M [µg/kg] | Sheep [µg/kg] | Cow [µg/kg] |
| Al * | 8.32 | 9.68 | 1.72 | N/A |
| Ba | N/A | N/A | 741 | 167 |
| Ca # | 4.5 | 2.17 | 1.70 | 1.25 |
| Ce | 14.7 | 12.2 | N/A | N/A |
| Co | 113 | 97.0 | 164 | 2.05 |
| Cr * | 1.38 | 1.25 | N/A | N/A |
| Cs | 14.0 | 14.2 | 25.5 | 1.13 |
| Cu * | 5.60 | 4.72 | 0.34 | 0.04 |
| Er | 1.24 | 1.22 | N/A | N/A |
| Fe * | 44.7 | 41.8 | 1.40 | 0.26 |
| K # | 6.78 | 6.75 | 1.11 | 1.54 |
| La | 10.4 | 9.26 | N/A | N/A |
| Li | 105 | 103 | 8.88 | N/A |
| Mg * | 557 | 564 | 151 | 108 |
| Mn * | 9.87 | 8.88 | 0.13 | 0.02 |
| Mo | 137 | 107 | N/A | N/A |
| Na # | 4.65 | 4.54 | 0.90 | 0.005 |
| Nd | 8.13 | 7.44 | N/A | N/A |
| Ni | 527 | 494 | 3.63 | N/A |
| P # | 2.12 | 1.72 | 1.42 | 1.06 |
| Pb | N/A | N/A | 20.5 | N/A |
| Rb * | 2.72 | 2.71 | 1.80 | 1.92 |
| Sr * | 1.58 | 1.27 | 1.52 | 0.53 |
| U | 9.07 | 6.15 | N/A | N/A |
| V | 445 | 421 | N/A | N/A |
| Y | 19.3 | 18.3 | N/A | N/A |
| Zn * | 39.0 | 36.7 | 5.26 | 4.28 |

* [mg/kg]. # [g/kg]. ^Indicates mineral present bellow detection limit (See Table S3). $^{\%}$ Results are reported as mean ± standard deviation from three independent replicates.

**Table 2.** μ-CT instrument operational parameters.

| Micro-CT setting | Unit | Value |
|---|---|---|
| Source Voltage | kV | 40 |
| Current | μA | 250 |
| Aluminum filter size | mm | 0.5 |
| Image pixel size | μm | 17.45 |
| Frame averaging | N/A * | 3 |
| Random movement adjustment | N/A | 4 |
| Rotation step | degree | 0.2 |

* N/A = Not applicable.

**Table 3.** Detection limits for bone ICP-MS analysis.

| Element | Detection limit [mg/kg] | Element | Detection limit [mg/kg] |
|---|---|---|---|
| Na | <40 | Ag | <0.05 |
| Mg | <44 | Cd | <0.1 |
| Al | <10 | Sb | <0.04 |
| P | <100 | Cs | <0.02 |
| K | <120 | Ba | <0.04 |
| Ca | <200 | La | <0.01 |
| V | <0.3 | Ce | <0.02 |
| Cr | <0.3 | Pr | <0.01 |
| Mn | <0.1 | Nd | <0.02 |
| Fe | <2 | Sm | <0.04 |
| Co | <0.04 | Eu | <0.01 |
| Ni | <0.1 | Gd | <0.03 |
| Cu | <0.2 | Dy | <0.02 |
| Zn | <20 | Ho | <0.005 |
| As | <0.1 | Er | <0.01 |
| Se | <0.2 | Tm | <0.01 |
| Rb | <0.04 | Yb | <0.01 |
| Sr | <0.04 | Lu | <0.01 |
| Y | <0.02 | Pb | <0.1 |
| Mo | <0.04 | U | <0.02 |

**Table 4.** Parameters determined in cortical and trabecular bone using μ-CT analysis (Reproduced from Burrow, et al. [7]).

| Characteristic | Abbreviation | Bone Type | Unit | Description | Desirability in relation to bone health |
|---|---|---|---|---|---|
| Bone volume | BV | | mm³ | Volume of the region identified as bone within the area assessed | |
| Bone surface | BS | | mm² | Surface area of the region identified as bone within area assessed | |
| Bone surface to volume ratio | BS/BV | | mm²/mm³ | Ratio between the surface of the area identified as bone and the total volume of that area | ↑ Desirable |
| Bone surface density | BSD | Cortical | mm²/mm³ | Ratio between the region identified as bone to the total volume of the region assessed | |
| Number of pores | PN | | number | Total number of all closed pores within the area assessed | |
| Volume of pores | PV | | mm³ | Total volume of all open and closed pores within the area assessed | ↑ Undesirable |
| Percentage porosity | P % | | % | The volume of all closed pores as a percent of the total volume assessed | |
| Bone volume | BV/TV | | % | Volume of the region identified as bone within the area assessed | |
| Bone surface density | BS/TV | | mm²/mm³ | Ratio between the region identified as bone to the total volume of the region assessed | ↑ Desirable |
| Bone surface to volume ratio | BS/BV | | mm²/mm³ | Ratio between the surface of the area identified as bone and the total volume of that area | |
| Trabecular pattern factor (fragmentation index) | Tb.Pf | | N/A* | An inverse measure of connectivity within the trabecular bone | ↑ Undesirable |
| Trabecular thickness | Tb.Th | Trabecular | mm | Mean thickness of trabeculae | |
| Trabecular separation | Tb.Ts | | mm | Mean distance between trabeculae | ↑ Desirable |
| Trabecular number | Tb.N | | 1/mm | The average number of trabeculae in a given length of bone | |
| Degree of anisotropy | DA | | N/A* | A measure of 3D symmetry from 1 to infinity with 1 meaning full isotropic (homogenous) characteristic and infinity full anisotropic characteristics | ↑ Undesirable |
| Fractional Dimension | FD | | N/A* | Indicator of surface complexity | ↑ Desirable |

* Unit-less measurement.