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Mineral Nutrients in Brazilian Commercial Dog Foods

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Mineral nutrients are essential chemical elements for a normal development of dogs. There are two groups of mineral nutrients required by dogs, macro minerals (Ca, P, K, Na, Cl and Mg) and trace minerals (Fe, Cu, Zn, Mn, Se, I). The body cannot synthesize any of them, thus dietary supplementation in proper quantity is crucial. Oversupplementation of one element may result in the deficiency of another, due to the interaction among minerals in the body. Either high or low level of a particular mineral in the diet can be harmful to dog's health, especially for growing puppies. Commercial dog foods must have balanced levels of mineral nutrients, which should follow regulations as that of the Association of American Feed Control Officials (AAFCO). In this context, a comprehensive sampling of dry dog food for puppies and adults of various brands was performed in the local market of Piracicaba city, Brazil, for evaluating the adequacy of mineral nutrients. Instrumental neutron activation analysis (INAA) was chosen to assess the chemical composition of the dog food, using two irradiations for determining both short and long-lived radionuclides. The moisture content of samples ranged from 5% to 12% in compliance with the values required by the Brazilian legislation for dry dog food. INAA was a suitable analytical tool for characterizing the profile of mineral nutrients in dog food, allowing the determination of Ca, P, K, Na, Cl, Mg, Fe, Cu, Mn, Zn, I and Se. In general, all concentrations of mineral nutrients were within the permissible limits established by AAFCO for growing puppies and adults, with some slight deviations. Therefore, one can consider the Brazilian commercial dog foods as having good quality in terms of mineral nutrients.

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