

### 34. Other minerals

**Sulphur** occurs extensively throughout the body and although a human deficiency syndrome has not been demonstrated, there is no doubt that it is essential. The sulphate anion is a component of proteoglycans (e.g. keratan sulphate, chondroitin sulphate and dermatan sulphate) which are vital constituents of the extracellular matrix <sup>1</sup>, and it is a substrate for the detoxification of various xenobiotics and their excretion as sulphate conjugates <sup>2</sup>. The sulphate for these functions is derived by the endogenous oxidation of the sulphur in the amino acids methionine and cysteine. Thus there does not appear to be any requirement for dietary sulphate.

**Silicon** may well be needed for the normal development of the skeleton and connective tissue and there does appear to be a differential distribution of the element in the body, with high concentrations in the lungs, tendons, trachea and aorta. Silica is absorbed poorly but silicic acid is taken up well by the intestine. However the significance of these observations is understood imperfectly, as are the human requirements for silicon <sup>3</sup>.

Some studies in animal models suggest that **cadmium** <sup>4</sup>, **lithium** <sup>5</sup>, **lead** <sup>6</sup> and **nickel** <sup>7</sup> may be essential, but the current data are not sufficiently conclusive to justify setting any recommended intakes. Similarly, evidence supporting the essentiality of **arsenic**, **boron** and **vanadium** has yet to be substantiated.

## References

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3. Carlisle EM. (1986). Silicon. In Mertz W, ed. *Trace Elements in Human and Animal Nutrition*, 5th ed. Vol 2. Orlando: Academic Press, 373-390.
4. Kostial K. (1986). Cadmium. In Mertz W, ed. *Trace Elements in Human and Animal Nutrition*, 5th ed. Vol 2. Orlando: Academic Press, 319-345.
5. Mertz W. (1986). Lithium. In Mertz W, ed. *Trace Elements in Human and Animal Nutrition*, 5th ed. Vol 2. New York: Academic Press, 391-397.
6. Nielsen FH. (1984). Ultra-trace elements in nutrition. *Ann Rev Nutr*, **4**: 21-41.
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### **35. Other substances sometimes considered to be of nutritional importance**

Certain nutrients are known to be dietary essentials for some higher animals, notably choline, taurine, carnitine and inositol.

It has been suggested that newborn humans may have insufficient biosynthetic capacity to produce their full requirement of carnitine, taurine and choline. Any possibility of this is usually allowed for in the make up of infant formulas.

There is no indication of any need for the compounds mentioned to be supplied in the diet of healthy individuals above the age of six months.

Many specific growth factors are known to be required in cell or tissue cultures, e.g. ubiquinone (coenzyme Q), lipoic acid, nerve growth factor, p-aminobenzoic acid. There is no need for them in human diets as they can be synthesized in the body in adequate amounts.

Over the years there have been many reports of benefits to be derived from the consumption of a wide variety of organic compounds that can occur in foodstuffs, e.g. amygdalin (laetrile), pangamic acid, bioflavonoids, chlorophyll, orotic acid. There is no persuasive evidence of any need for such compounds in the diet.