

## **Trivalent Chromium as a Dietary Supplement**

Chromium is found in foods in its trivalent form, notably in processed meats, whole grain bread and cereals, pulses and spices. Chromium is regarded by many authorities e.g., a study group of the World Health Organization, as an essential element (for further details, see ICDA: The Chromium File No 6 "Chromium as an Essential Nutrient"). As a consequence, dietary supplements containing chromium have become more and more widely used and available without a prescription.

During the last 5 years, the safety of the dietary supplement use of trivalent chromium compounds has been addressed by scientific committees both in Europe and the United States. Associated regulatory action was instituted in the European Union.

In the European Union, EU Directive 2002/46/EC relating to food supplements lists chromium (III) chloride and sulphate as acceptable for use in the manufacture of food supplements, but excludes chromium picolinate. In evaluations by scientific committees in the European Commission and the UK, the oral toxicity of poorly absorbed inorganic trivalent chromium compounds was regarded as low, and there was no evidence of adverse effects associated with human intake of up to 1 mg chromium per day. However, the data were not sufficient to derive a tolerable upper intake level. Regarding chromium picolinate, a safe daily dose could not be determined against a background of unclear reports of toxicity coupled with the compound's higher bioavailability and ability to enter cells.

A parallel evaluation in the US (Food and Nutrition Board, Institute of Medicine) also reached the conclusion that the data were insufficient to establish the tolerable upper intake level for soluble trivalent chromium salts. The committee stated that "No adverse effects have been convincingly associated with excess intake of chromium from food or supplements, but this does not mean that there is no potential for adverse effects resulting from high intakes". Another committee of the Institute of Medicine specifically reviewed the safety of chromium picolinate and found no evidence to raise concern when the substance is used in the intended manner, i.e., up to 1.6 mg Cr picolinate per day for 3-6 months.

Further research work is clearly needed to assess the safety of high-dose chromium regimens. Significant future advancements in the chromium supplement field will be reported by ICDA.