european aluminium association

ALUMINIUM AND HEALTH

Fact sheet 6

ALUMINIUM IN FOOD AND PACKAGING

Most foods have some natural aluminium content, due to the abundance of aluminium in nature. Examples of food with high aluminium contents are tea and some herbs and spices. In the normal European diet, the daily aluminium intake from various foods is estimated at 3-10 mg, depending on the type of food. In the U.S.A. this is normally higher because of greater use of intentional food additives, often used in processed cheese, dry powdered products and biscuits. These additives, which consist of aluminium salts, are all approved by the appropriate authorities. Nearly all the daily aluminium intake comes from natural sources.
During the FAO/WHO Expert Committee on Food Additives in 2006 it has been established a PTWI (Provisional Tolerable Weekly Intake) for aluminium of 1 mg/kg body weight which applies to all aluminium compounds in food, including additives. The Committee pointed out that the available studies have many limitations and are not adequate for defining the dose response relationship, and hence applied an uncertainty factor of 100 and an additional uncertainty factor of 3.
Further data on the bioavailability of different aluminium-containing food additives were required and need for an appropriate study of developmental toxicity.
Since this time (2006) new data have been submitted to the Joint Expert Committee and will be analyzed during the 2011 mid year session.
Aluminium in the form of foils, menu trays, cans and other utensils is used extensively for the protection, storage, preservation and preparation of food and beverages. It conducts heat extremely well, making it very energy efficient for preparing and serving both hot and cold food.
Aluminium is also very light, reducing transport costs and making it suitable for packaging applications where weight is important. Aluminium is used in several types of packaging, also combined with other materials, because of its excellent barrier function. It keeps out micro-organisms, air and light in order to preserve the contents and extend the shelf life for the products.

Aluminium oxide, which forms on the surface of all aluminium metal in the presence of air, is stable in the pH range of 4.5 to 8.5, making aluminium suitable for storage of many different food types.
Aluminium beverage cans and food cans have a protective coating applied on the inside to prolong storage life. This ensures that the acids and salts in beverages or food never actually come into contact with the metal.

Aluminium foil wraps much of our food and is used domestically in the kitchen. It is widely accepted that only negligible amounts of aluminium get into foods in this way. As indicated earlier, some aluminium is ingested in the diet and this has always been the case given its abundance and presence in natural foods. The

contribution from foods cooked in aluminium saucepans or from aluminium foil and beverage cans is almost negligible (normally in the order of 0,1 mg/day).
The only exception is when highly acidic or salty foods are cooked or stored in uncoated aluminium utensils for extended time periods.

From low levels of ingested aluminium, only a very small percentage of what is ingested is absorbed by the stomach and intestines and almost all of what is absorbed is excreted by the kidneys. Recent studies have shown that less than 1% of ingested aluminium is absorbed and this can be as low as 0,01% depending on other constituents present.

References :

Joint FAO/WHO Expert Committee on Food Additives. Sixty Seventh Meeting – Rome 20 – 29 June 2006.

EFSA – Safety of aluminium from dietary intake -Scientific opinion of the panel on Food Additives, Flavourings, Processiong Aids and Food contact materials – 22 May 2008.