

Aluminium and Alzheimer's Disease

Aluminium is one of a number of factors that have been suggested as a cause for Alzheimer's disease. This sheet examines the role of aluminium in the body and the evidence for a connection between aluminium and Alzheimer's disease.

Currently there is disagreement about this connection and no clear statements can be made with certainty about the role of aluminium as a possible cause of Alzheimer's disease. However, the balance of evidence does not appear to support a specific role for aluminium in Alzheimer's disease.

What is aluminium?

We usually think of aluminium as a light silvery metal used to make pots and pans, aeroplanes or tools, but it also has a non-metallic form. It is this form of aluminium that makes up eight per cent of the earth's surface.

Where is it found?

In the environment

Aluminium in its non-metallic form is found everywhere:

- Naturally in the foods we eat
- In drinking water as a natural component
- In many food products, added during manufacturing
- In many cosmetics
- In drugs, to make them more effective or less irritating
- In the air we breathe as a result of dry soil, smoke, and sprays.

In the body

Aluminium is always present in the body, but there is no evidence that it has any role in normal

metabolism. Very little of the aluminium taken in by a healthy individual is actually absorbed; most is flushed out of the body by the kidneys.

Is there a connection between aluminium and Alzheimer's disease?

Like many other substances, aluminium is toxic to brain cells. The possible link between aluminium and Alzheimer's disease was first put forward in 1965 when it was shown that injection of aluminium compounds into rabbits caused tangle-like formations in nerve cells. However, these experimental tangles differ in structure and composition from Alzheimer tangles in the human brain.

Metals are crucial for normal brain function. There is abundant evidence that the toxicity of the beta amyloid protein and its deposition in plaques is connected to age related changes in the movement of copper and zinc in

particular, into and out of brain cells. However, there is no clear pathological role for aluminium in Alzheimer's disease despite its common presence within amyloid plaques.

At present so little is known about the underlying cell changes in Alzheimer's disease that definitive statements about the role of aluminium cannot be made with any certainty. However, the balance of evidence does not appear to support a specific role for aluminium in Alzheimer's disease.

Further work to resolve this problem is going on. These studies are not easy – aluminium is abundant in the environment and exists in many different chemical forms, so exposure is extremely difficult to measure.

Despite the widespread presence of aluminium, there are no consistent reports which correlate aluminium exposure with Alzheimer's disease and the majority of elderly people do not get Alzheimer's disease. Therefore, the risk from aluminium, if any, must be small.

Based on *Causes of Alzheimer Disease: Aluminium*, Alzheimer Society of Canada, and *Aluminium, Mercury and Alzheimer's Disease*, Alzheimer's Society UK.

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Further Information

A range of books and videos, Help Sheets and Update Sheets are available through Alzheimer's Australia in your State or Territory by contacting the National Dementia Helpline on 1800 100 500.

Help Sheets and Update Sheets, including any more recent information, can also be obtained on the internet at www.alzheimers.org.au