Potential Treatment Of Metal Induced CFS Using Curcumin Based Antioxidants.

The Role Of Metals.

There is a large amount of information available regarding CFS, and the related conditions of CFIDS, PVFS, and ME. In terms of the possible causes of CFS, the website of The Environmental Illness Resource, at www.ei-resource.org, gives a good summary, as follows:
The cause, or causes of CFS are still not clear. There are a number of theories that have been proposed, the main ones propose the following factors as the cause, or causes, of the illness:

- Viral Infection
- Immune or Endocrine Dysfunction
- Autonomic Nervous System Dysfunction
- Environmental Toxins
- Genetic Predisposition
- Candida Overgrowth/Gut Dysbiosis
- Heavy Metal Sensitivity
- Emotional Stress or Trauma

This position is supported by the RACP and outlined on the website www.mja.com.au under CFS Clinical Guidelines 2002.

Background.

In this case, the subject was employed in an aluminium remelting plant over a three-year period from 1996-1998. The plant processed 1200 tonnes/month of aluminium, and exposure was predominantly by inhalation. After persistent symptoms, in May 1998 the subject's health had deteriorated, so he attended a clinic for a full check-up. The symptoms evident were gastro-intestinal (IBS), fatigue, Non Alcoholic Fatty Liver Disease (NAFLD), an elevated RDW (anisocytosis), and an increased number of URT infections. The problem was incorrectly diagnosed, and no further tests were conducted.

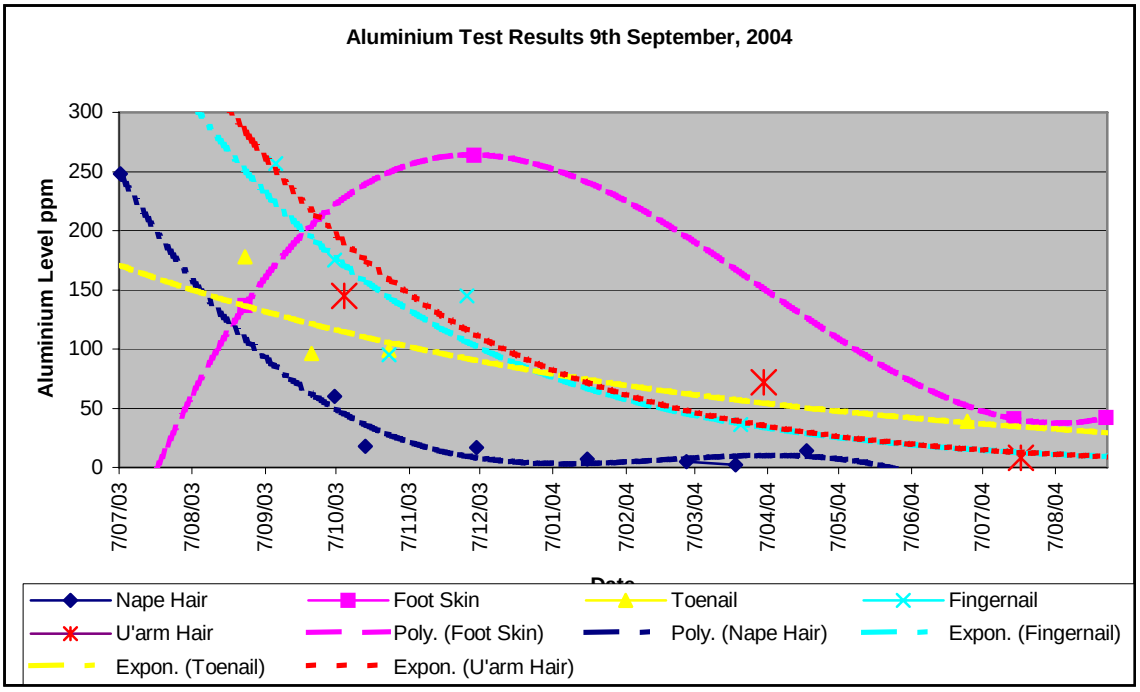
Discovery.

In 2003 the subject contracted cellulitis, which was taking a long time to heal. In the investigation of the reason for the delayed healing, a hair sample

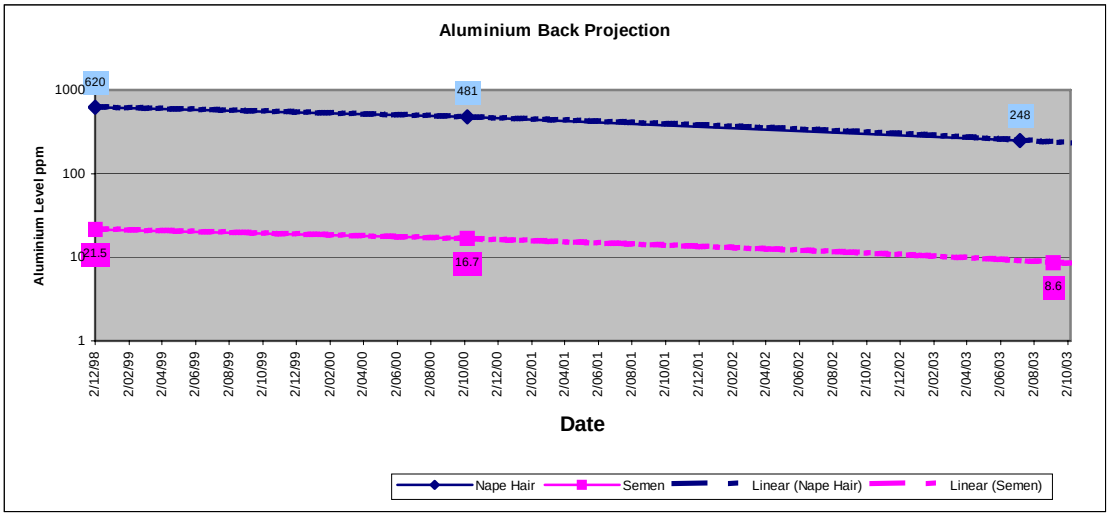
was taken in July 2003 and submitted for mineral analysis. The result reported for Aluminium was 248 parts per million (ppm).

The reference interval established by the laboratory in accordance with normal clinical laboratory protocol is less than 18 ppm. The level of Al in the range reported (248 ppm) is found in less than 0.04% within the population tested of over 27,000 patient samples processed by the laboratory.

The initial hair tissue mineral analysis was supported by tests of other tissues including Toenail, Fingernail, Foot Skin, Semen, and Underarm Hair. Refer to **Graph One** below for the initial results and changes mapped over the duration of stage one chelation:

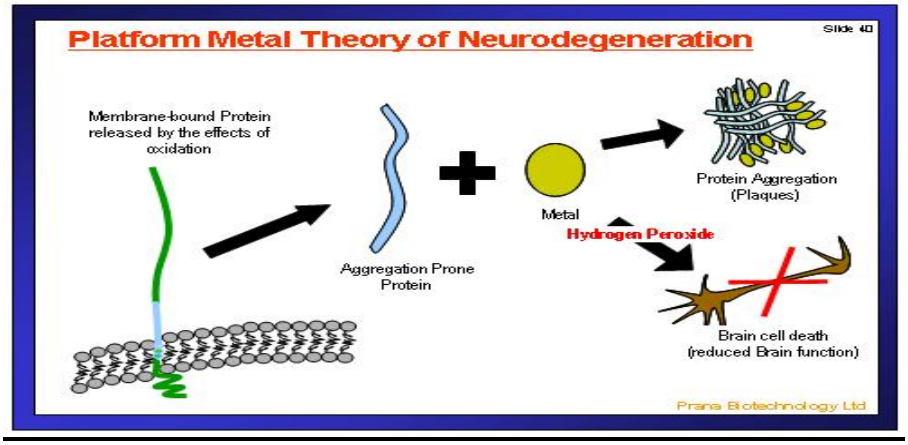


In order to confirm the likely source of exposure, semen from 2000 was tested and allowed the construction of the probable contamination curve. The aluminium levels are consistent with a biological half-life of 3 years, as per the WHO EHC 194-1997, and indicate that the level of tissue contamination in 1998 would have been about three times the level detected in 2003. Refer to **Graph Two** below for the backward projection of aluminium levels:



Health Effects.

The adverse effects of metals on the human body are many and varied. They may be both Primary and Secondary effects.
Primary effects include free radical production, gut flora destruction, sweat gland blockages, enzyme dysfunction, impaired bone mineralisation, impaired erythropoiesis, lipid peroxidation, reduced dopamine activity, neural protein agglomeration, arterial accumulation, renal toxicity, hepatotoxicity, adrenal insufficiency, reproductive impairment, and cognitive impairment. Secondary effects include viral susceptibility, elemental imbalances, and nutritional element deficiencies.
Aluminium, iron, zinc, & copper are implicated as contributory factors in the incidence of Alzheimer's disease, and aluminium has also been associated with ALS, Parkinson's disease, MS, and Down's Syndrome. Refer to the website www.pranabio.com for their MPAC theory as an example, as below:

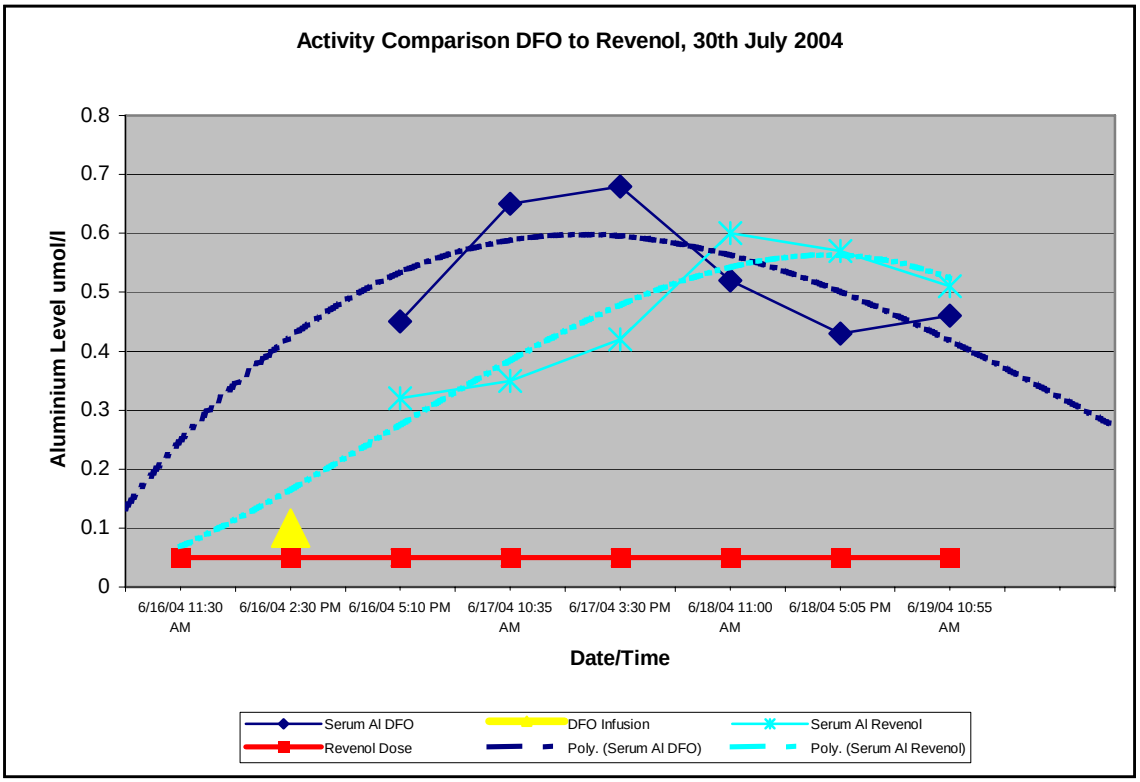


Chelation Therapy.

The accepted treatment for high levels of metals is chelation, which binds and removes the contaminant from the body via the kidneys. There is no specific binding agent for aluminium, and typically both desferrioxammine (DFO) and EDTA are used. DFO has a number of well-defined side effects and is used with great caution if required over a long period.
It was found that a curcummin-based anti-oxidant was very effective at removing aluminium from the body, as reflected in Graph One.

As a comparison, DFO was tested to determine if it would be more suitable for the removal of brain aluminium. It was found that DFO was marginally more effective, however, the cost of a DFO injection was around $200, compared to the cost of the curcummin-based anti-oxidant at around $20. The serum aluminium level obtained by curcummin was 88% of that for DFO, and the urinary aluminium level was 75% of that for DFO.

The result of the trial appears in **Graph Three** below:



Populations At Risk.

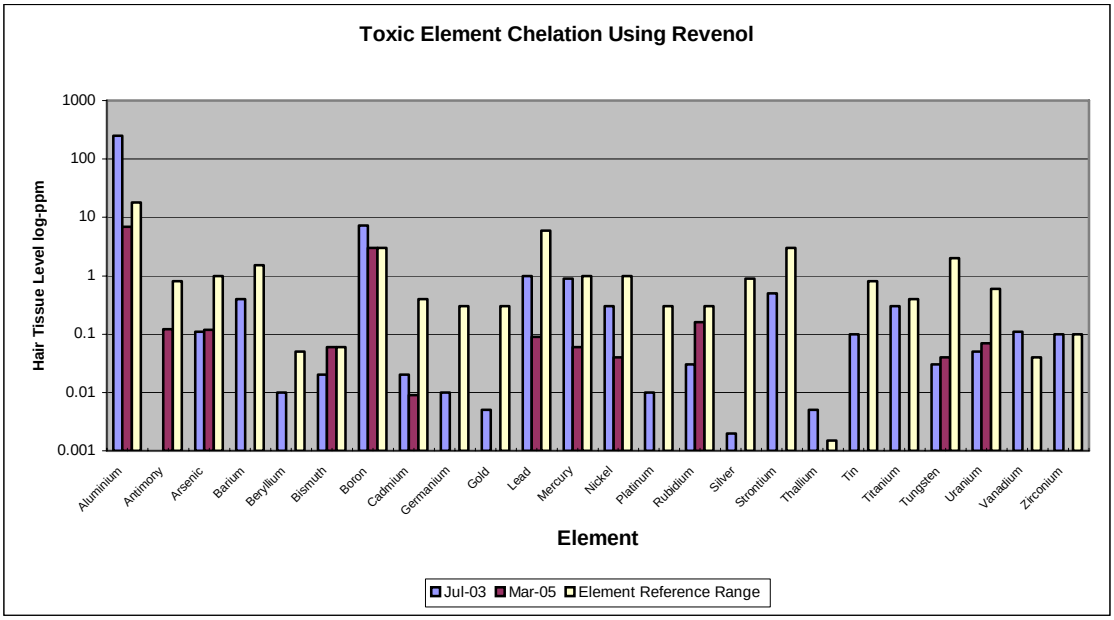
The document produced for the WHO, entitled EHC-194 (1997) Aluminium, acknowledges the risk of aluminium for certain populations, which are, for example:

- Premature infants
- Dialysis patients
- Persons with impaired renal function
- Occupationally exposed workers

By implication, anyone who is exposed to a short-term overload, or has a reduced capacity to process the metal, must also be included in the risk categories. As an example, the poisoning at Camelford in 1988 is such a case where normal healthy individuals were placed into the risk category by a chemical incident.

Hair Mineral Analysis.

The very high level of aluminium found in hair indicates a past exposure where there has been a considerable sequestration of aluminium into tissues. There was NO CORRELATION between hair tissue aluminium and serum and urinary aluminium prior to the start of chelation, which is consistent with a historical exposure. Over the period of primary chelation, the hair tissue test profiles of the subject clearly show that curcummin is removing all of the toxic elements, refer to **Graph Four** below:



The Reference Values in Graph Four are at the lower end of the currently acceptable reference ranges for each element, and the Y-Axis values are on a logarithmic scale. Hair and tissue samples were taken using good laboratory practices (GLP) at all times and this was certainly the key to obtaining reliable results both in terms of accuracy and consistency:

Conclusions.

A number of important conclusions can be drawn from this case study that will benefit sufferers of CFS, and they are as follows:

- Hair and tissue elemental analysis is an excellent indicator of a past exposure to toxic metals where there has been sequestration, and also of elemental deficiencies and imbalances.
- Due to the time between exposure and testing, blood and urine testing will NOT be reveal the sequestration of metal into tissues.
- Curcummin appears to be a very strong anti-oxidant and chelator of metals, including aluminium, and offers the associated benefits of no known side effects.
- Due to the very strong links between aluminium and other metals in neurological dysfunction, it is hypothesised that curcummin is an effective treatment for such dysfunctions, including Alzheimer's disease, which may only be currently manifest as pre-symptomatic mild cognitive impairment.

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