Silicon in Breast Milk

A single sample of breast milk was obtained from a lactating donor with a ruptured PIP breast implant.

This sample was analysed by LGC Health Sciences for the presence of total silicon. In this context the term 'total silicon' includes low molecular weight siloxanes that are likely to represent only a relatively small proportion of the silicon species present.

Although the method used has not been fully optimised and validated, and are therefore subject to a lack of precision, the results obtained indicate that the level of total silicon in this sample of breast milk was less than 100 µg/litre (equivalent to less than 100 parts per billion [ppb]).

It is relevant that a sample of normal semi-skimmed cows' milk that was used to develop assay method was found to have levels of total silicon of approximately 500 µg/litre (500 ppb).

It is also relevant to draw comparisons between the results recorded here and analyses reported previously (in 2004) as part of a Swedish National Screening Programme conducted by the Swedish Environmental Research Institute. In that study (which employed a different analytical method) 49 human breast milk samples from normal women (supplied by the University of Lund, Sweden) were investigated. Of those 49 samples, 11 were found to contain detectable levels of siloxanes (D4, D5 and D6, 3 common polydimethylsiloxanes). The maximum levels found were as follows: D4 10 µg/litre; D5 4.5 µg/litre; D6 4.8 µg/litre. The highest level of total (D4, D5 and D6) siloxanes recorded was between 13 and 14 µg/litre (13 -14 ppb).

Taken together, the results demonstrate that silicon materials can be found at low levels in breast milk taken from a subject with a ruptured PIP breast implant. A proportion of these silicon species may be siloxanes. However, siloxanes have been found at detectable levels in over 20% of breast milk samples taken from normal women.

Finally, normal commercially available semi-skimmed cows' milk was found to contain considerably higher levels of total silicon than the sample of breast milk taken from a woman with a ruptured PIP implant.

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Medicines and Healthcare products Regulatory Agency (MHRA)
151 Buckingham Palace Road London SW1W 9SZ UK
T 020 3080 6000 www.mhra.gov.uk