Meat and dairy: where have the minerals gone?

We continue our series looking at the effect of modern farming on the quality of our food.

In this magazine a year ago we highlighted the loss of essential minerals – calcium, magnesium iron etc – from our fruit and vegetable supply.

The figures made alarming reading. Comparing the mineral levels in the 1930s with those in the 1980s showed that modern fruits and vegetables were typically depleted in minerals by 20%. The fact that modern fruit and vegetables contained more water could only explain some of the losses. Intensive farming on exhausted land was likely to be the major cause of the decline in the nutritional quality of the food, along with the selection of varieties for qualities other than nutrition.

Now researcher David Thomas has analysed data on meat and dairy foods, comparing their levels in the 1930s (published by McCance & Widdowson in 1940) with the most recent government tables, published in 2002. Once again, the figures make alarming reading.

As we show on this page, the mineral content of popular meats and milk products has fallen significantly. Looking at 15 different meat items, Thomas found the iron content to have fallen on average 47%, with some products showing a fall as high as 80%. The iron content of milk had dropped by over 60% while for cream and eight different cheeses the iron loss was over 50%.

The calcium loss from milk was only slight, but from cheeses it averaged over 15% – and in high-value Parmesan cheese the loss was an extraordinary 70%, implying a considerable dilution of the original highly concentrated recipe for this cheese, or some other significant shift in ingredients to account for this change.

Copper and magnesium, essential for enzyme functioning, also showed losses in meat products (typically 10% fall for magnesium and 60% fall for copper) and dairy foods (typically 25% fall for magnesium and an extraordinary 90% fall in copper).

Should we worry?

We live longer than ever, and we have access to abundant food supplies, so are these changes in nutrients any reason to be concerned?

We believe so. Minerals and trace elements play a major role in our physical and psychological well being. The recent changes in dietary habits towards highly processed foods means we are likely to be over-fed yet malnourished in terms of these micronutrients. Medical science may help keep us alive longer, but we are not necessarily healthier, nor happier. As Thomas concludes, *'minerals are what we are made of (to quote the Bible: "ashes to ashes, dust to dust") and it would be very difficult to underestimate their importance as a catalyst for developing and maintaining good health'.**

The recent National Diet and Nutrition Survey of adults showed that young women, particularly, were likely to have diets seriously deficient in essential minerals. Up to 8% were below the Lower Reference Nutrient Intake (LRNI) for calcium, 20-22 percent were below the LRNI for magnesium, and 40% were blow the LRNI for iron. LRNI is the amount of a nutrient that is enough for only the small number of people who have low requirements (about 2.5% of the population).The majority need more.

These women were the key age group for childbearing, and so, to continue the biblical analogy, the sins of our agricultural practices may yet be visited many-fold upon the next generation.

* D Thomas *Commentary on tables showing changes in mineral composition.* Unpublished. David Thomas works as a researcher and nutrition adviser and mineral supplement supplier. Contact him by email: david.mri@btconnect.com

"Frankly, Mr Thomas, I'm not happy

Table 1. Changes in mineral composition of milk 1940-2002 Values in milligrams

	1940	2002	change
Sodium	50	43	down 14%
Potassium	160	155	down 3%
Phosphorus	95	93	down 2%
Magnesium	14	11	down 21%
Calcium	120	118	down 2%
Iron	0.08	0.03	down 62%
Copper	0.02	>0.01	all gone

Sources: *McCance and Widdowson* 1940; *McCance and Widdowson* 6th edition 2002.

Table 2. Selected foods showing 1940s mineral levels (per 100g) and amount lost by 2002

Values in milligrams

	Magnesium	change	Calcium	change	Iron	change
Cheddar	46.9	down 38%	810	down 9%	0.57	down 47%
Stilton	27.2	down 45%	362	down 10%	0.46	down 57%
Parmesan	49.6	down 70%	1220	down 70%	0.3	all gone
Beef rump steak	24.8	down 7%	5.2	down 4%	6	down 55%
Corned beef	29	down 48%	12.8	down 45%	9.8	down 76%
Streaky bacon	25.1	down 16%	52.3	down 87%	3.2	down 78%
Chicken meat roast	23	no change	24.5	down 31%	2.6	down 69%
Turkey	28.2	down 4%	38.3	down 71%	3.8	down 79%