THE FOUNDATION FOR SCIENCE AND TECHNOLOGY

The Academy of Medical Sciences

REPORT OF A DINNER/DISCUSSION
(A Joint Meeting with the Academy of Medical Sciences)

SALT AND DIET – TOO MUCH OR TOO LITTLE?

Held at the Royal Society on Tuesday, 24 April, 2001

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In the Chair: **The Rt Hon The Lord Jenkin of Roding**, Chairman, The Foundation for Science and Technology

Speakers: **Professor Morris Brown FMedSci,** Professor of Clinical Pharmacology, Addenbrooke's Hospital and University of Cambridge
Professor Paul Elliott FMedSci, Professor of Epidemiology and Public Health Medicine, Department of Epidemiology and Public Health, Imperial College of Science, Technology and Medicine
Professor Rob Pickard, Director General, British Nutrition Foundation

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The lectures referred to the evidence linking high blood pressure with the risk of coronary heart disease and strokes, and sodium intake with high blood pressure. They also noted that the picture was far from simple. Professor Brown, in particular, drew attention to the range of possible causes of high blood pressure, to genetic factors and to age-related differences in physiological responses. Professor Pickard described some of the pitfalls in translating scientific evidence into practical dietary advice, and in particular the danger of focussing too much on a single factor and neglecting the importance of lifestyle. He argued that advice should be tailored to individual circumstances, not applied doctrinally to a heterogeneous population.

In discussion it was observed that people used to earn their bread by the sweat of their brow. That reason for eating salt - to replace what was lost in sweat - had not been mentioned by any of the invited speakers. One response to this was that a regulatory mechanism ensured that people on a low-sodium diet excreted less salt. The Yanomami Indians sweated but ate virtually no salt. There were also, however, genetic differences in the propensity to excrete salt. Professor Brown's lecture had mentioned the selection of slaves to be transported to America, those whose sweat was least salty being favoured because they were more likely to survive the voyage. It was argued that advice on minimum salt consumption should take account of lifestyle - sportspeople, for example, might need more - and that very low salt levels could put people at greater risk if they lost fluid in an accident.

The lectures had referred to clinical trials of the connection between salt intake and high blood pressure, but not to similar trials of a link between salt consumption and coronary heart disease. Observational data suggested that eating less salt would reduce the risk of heart disease, but this had not been tested in a large-scale clinical trial and it was questioned whether it could be done. Heart disease was not the only relevant ill effect to be considered: salt consumption was also linked to osteoporosis, stomach cancer (notably in Japan) and oedema. The main culprit was the accumulation of sodium from salt. There were many ways to reduce it, but it could not simply be replaced with, for instance, potassium without causing other problems.

The ability of the wild Bactrian camel of the Gobi desert to drink salt water and survive suggested to one speaker that there might be scope for genetic manipulation to protect people against harm from salt. In answer it was said that genetics could indeed be a powerful tool against single gene disorders. Many, however, depended on multiple genetic factors and environmental influences and would not be easy targets for gene-based diagnosis or therapy.

One contributor described the debate between the invited speakers as a judicial nightmare. Faced with two experts - Professor Brown and Professor Elliott - who contradicted each other and a third speaker, Professor Pickard, who played the part of the honest broker and urged caution, any court would have a hard time deciding whether salt was dangerous.

In response it was said that there was in fact much common ground between the speakers. There was clear evidence that blood pressure could be reduced by a low-salt diet. Many independent studies in different countries had confirmed this. Before the current drugs for severe hypertension were introduced, a drastic reduction in salt intake was the only remedy, and it worked. But the question needed to be phrased with care. If it was asked whether salt was dangerous, reasons could be found for saying yes in some cases. The real question was whether salt reduction was an appropriate policy, and what evidence there was to show that it would yield benefits. Demonstrating benefits was very hard, even for drug therapies. It could nevertheless be wise to play safe even in the face of unclear evidence. There was a story of a cardiologist who started eating fish sandwiches following a heart attack, even though he did not think the benefits of this diet were proved, because he did not want to be the cleverest man in a grave. On one view, the latest trials had shown that an achievable reduction in salt was well worth while. It was argued that it was sensible to pursue gradual reduction in salt and then review the results.

A number of factors influenced levels of salt consumption. One national survey had shown that the size of the hole in the salt cellar was the main thing that determined how much people added to a meal before eating it. A celebrated restaurateur, who refused to put salt on the table, on the ground that he would put in whatever was needed, had not prospered. There were strong cultural factors: one speaker had looked at the cookbooks of famous chefs and found that they were all based on the use of saturated fats and salt. Conditioning was not everything, since the speaker's grandchildren, brought up on a low-salt diet, had fallen on sausage and chips when introduced to it. But the lectures had in any case noted that most of the salt in the average diet in the UK was not added by the consumer but incorporated in prepared foods. It was argued that the food industry should give consumers a choice.

One speaker's experience was that most manufacturers took a responsible view and had no wish to impose unnecessary salt on consumers. Another contributor to the discussion observed that the industry was not in the business of killing its customers or making them ill. Nor, however, could it afford to produce food which did not sell. Change took time, partly because existing technology used salt for a number of purposes and partly because tastes could only be adjusted gradually. The bakers had cut down salt levels in bread and found that consumers did not notice a modest reduction, but all the suppliers had to move together. One major manufacturer took salt out of its baby foods and found that they tasted like wallpaper paste. They had to work hard to find acceptable ingredients. Suppliers did, however, want a lead from the scientific community. At the moment they received unclear messages.

Salt illustrated the way official policy on food had to be developed in the face of uncertainty. Where the evidence was incomplete the Government had to go into precautionary mode and weigh costs and benefits. Policy on salt was a shared responsibility of the Food Standards Agency and the Department of Health. The target adopted was to reduce average consumption to no more than 6 grams of salt per day. This implied a substantial reduction, indeed a halving of some people's intake. For children, who tended to eat much the same as adults, there was no point encouraging an unnecessary salt habit. More research was needed on low-salt food for children, for example with some salt on the outside, for taste, rather than mixed in.

Moderating the intake of salt was only one of a number of important public health messages on diet. Not eating too much, a balanced diet and exercise were all important, and advice needed to be simple and focussed on the main points. It was observed that consumers responded best to precise advice, for instance to use skimmed milk or eat brown bread. There was a wide range of factors tending to promote obesity, but more than 20 years of exhortation to eat a balanced diet had not succeeded. Food labelling too needed to be simple. From this point of view it was unfortunate that the law required labels to give sodium rather than salt content, since the recommended maximum intakes of sodium were different for men and women.

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