



SACN STATEMENT ON GENETIC TESTING

October 2008

The Scientific Advisory Committee on Nutrition (SACN) has noted an increase in the availability of genetics tests linked to advice on nutrition. General advice on genetic testing, and its implications for individuals and their families, is provided by the Human Genetics Commission on their web site (<http://www.hgc.gov.uk>). The purpose of this statement is to help provide consumers with information on genetic tests specifically related to nutrition.

Genes: Scientists estimate that there are around 20,000-25,000 human genes and many of these influence the way the body uses nutrients. All humans have the same set of genes but there are slight variations within them. These variations mostly have no known effect on the function of genes, or on health. However, in some cases they may have subtle effects and very rarely the effects may be large. The study of these variations is useful in nutritional science as it provides information on what genes do and how nutrition might influence health. Some of these research findings are now being used to develop genetic tests linked to so called 'personalised nutrition' where nutritional advice is provided, or specific products recommended, on the basis of genetic makeup.

Genetic tests: In these tests a sample of genetic material (DNA) is obtained, usually from cheek or blood cells, and one or more of the known variations within a gene are measured in the laboratory. These tests are relatively easy to carry out and competent laboratories should produce an accurate result. The issue is whether the result has any biological meaning. In those rare cases where the effect of genetic variation is large, as in the so called 'inborn errors of metabolism', the tests are available through routine healthcare. An example is the serious condition of phenylketonuria which all neonates in the UK are tested for in the 'Guthrie' test. Screening tests for such important inherited diseases are provided as part of routine healthcare and have been properly evaluated. SACN is concerned about the increasing availability of nutritional genetic tests which have not been evaluated in the same way.

Lifestyle advice: Even where research has identified a statistical link between genes, nutrition and health, the general scientific consensus is that these associations are not strong enough to justify a change in diet or nutrient intake on the basis of genetic makeup. Furthermore, these tests are generally based on a set of unproven assumptions about the way genes interact with nutrition to affect health. Whilst there is little or no evidence of a clear health benefit from taking these tests there are

several potential disadvantages. Apart from the cost of the tests, the result could create unnecessary anxiety over perceived disease risk. This anxiety may extend to close family members who have a high probability of carrying the same genetic variation. Nutritional advice based on unvalidated gene tests may result in inappropriate supplement use or avoidance of specific foods or food groups which could itself constitute a risk to health.

Conclusion: The Committee highlights the compelling evidence that eating a healthy balanced diet, taking regular exercise, not smoking, and very limited consumption of alcohol, reduces the risk of chronic diseases such as heart disease and some cancers. Current dietary recommendations are based on this evidence. The provision of additional nutritional advice on the basis of genetic testing is speculative at best and may even be harmful and is not recommended by SACN.