

New study detects early metabolic signals that our bodies are not coping with diet or lifestyle

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Gene markers identified which could provide early signals that our bodies are not coping with diet or lifestyle choices

New research from the University of Aberdeen's Rowett Institute of Nutrition and Health has identified gene markers which could provide early signals that our bodies are not coping with diet or lifestyle choices.

Their findings, published recently in the journal *Molecular Nutrition & Food Research*, could provide the key to more tailored interventions through diet or exercise – and before serious [health](#) problems begin.

Researchers tested the blood of healthy volunteers who had consumed meals containing both saturated and unsaturated fats to create a [gene](#)

[expression](#) profile. They found that although none of those taking part had overt signs of disease, their bodies did not all react in the same way to the consumption of food.

Dr Janice Drew, who led the study, said: "When we eat, our bodies show mild metabolic stress responses to the food. This is perfectly normal and our bodies resolve this quickly when functioning normally.

"But what we discovered is that some people exhibit atypical metabolic stress responses and, at a molecular level, this may suggest slight deviations from the healthy norm. This did not appear to be a direct effect attributable to age or BMI

"If the normal responses to food are compromised, this may cause health implications over time – particularly when foods high in fat or sugar are regularly consumed."

Researchers found that changes in the level of gene expression - increased or decreased levels of certain genes - in cells in our blood could act as markers providing information that precedes the development of diet and lifestyle related diseases.

Dr Drew added: "The gene markers we identified may provide early indicators of unhealthiness which are the forerunners to developing disease but further research is required if we are to understand this system better.

"Our study highlights the need to look at the pre-disease stage so that any changes in blood cells can be detected very early. This would provide greater opportunity to intervene to prevent pathways to disease and a better chance of restoring metabolic health.

"This key finding could assist in the design and testing of effective

interventions better tailored for each individual.

"Crucially, we would be able to detect whether a diet low in fat or sugar, a programme of exercise, or a combination of both is having a positive impact. Being able to demonstrate to someone how their metabolic health is improving to changes in their lifestyle could prove a good motivator.

"We will now be working to characterise these gene markers and to identify ways to modify gene expression levels to maintain and/or restore health. Importantly the genes we are interested in are potentially modifiable by specific foods, diet and lifestyle interventions."

More information: Drew, J. E., Farquharson, A. J., Horgan, G. W., Duthie, S. J. and Duthie, G. G. (2014), "Postprandial cell defense system responses to meal formulations: Stratification through gene expression profiling." *Mol. Nutr. Food Res.* doi: 10.1002/mnfr.201400331

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