

TRANSCRIPT

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**THE ROLE OF BAKED PRODUCTS IN HEALTH AND WELLBEING;
OPPORTUNITIES & CHALLENGES**

BRIAN ROBINSON:

We'll now move on to the next speaker. I have a great deal of pleasure in inviting Professor Jeya Henry, head of Food Science and Nutrition at Oxford University and Royal Society visiting professor at the Chinese University of Hong Kong. I have actually had the privilege of hearing and spending some time talking with Jeya and found whatever he talks about is fascinating and I'm sure he has got a very interesting address for us today. He currently has served as a member of the UK Food Standards Agency and acts as a consultant to the World Health Organisation, UNICEF and Asian Development Bank. Professor Henry's major research interests are in energy metabolism, obesity and human growth. He has published over 150 papers and edited five books and in December 2007 he delivered the IFST Annual Lecture on Nutrition. Professor Henry, we are very much looking forward to hearing from you today and welcome you to the stage to talk about the role of baked products in health and well-being, opportunities and challenge.

[Applause]

JEYA HENRY:

Thank you very much, Chairman, for your very kind words of introduction. Let me first thank the organisers for inviting me here today, it is an absolute delight and pleasure to be amongst such a distinguished and august gathering.

My talk this morning is to reflect upon the role of baked products in health and well-being, opportunities and challenges. I want to divide my talk into three parts, to talk a little bit about the role of cereals in human history, move on to say something about the nutritional health properties of cereal products and then look in the crystal ball of what are the future opportunities and in the same breath talk about the challenges.

Now I want to start with the historical perspective and I think this is a very sobering slide for us to remind ourselves that until just 10,000 BC our entire global population, our ancestors in fact, were hunter gatherers. By 1500 AD from 100% hunter gatherers, the hunter gatherer population came down to about 1% meaning that we became from hunter gatherers to farmers and in the 21st century, as we speak now, there are probably 0.00001% of the people that are hunter gatherers, but I want to draw your attention to that because it tells us something about the way in which we have moved as a human

civilisation on the strategy of food acquisition and what that has done to our health and well being.

I want to draw your attention to three points on this graph. The first is that modern food technology is incredibly recent in origin, only about 150 years ago, and notice how the advent of food technology has also brought about an exponential increase in population. I hope that is not a cause and effect, but the second point to also remind ourselves is that this is an incredible blink of an eye in terms of human evolution because for a very large period of time we were hunter gatherers and then about 10,000 years ago we had the revolution which we call the induction of farming or agriculture, which happened round about 10,000 years ago. This transition, as we shall see, brought about some enormous changes and this is what I will spend a little bit of time on.

Now although I commented to you that modern food technology is only about 150 years ago, this is hieroglyphics from Giza in Egypt amongst the Egyptian pyramids and it tells us that preparation of bread and beer is about 5000 years old so bread manufacturer is one of the first professions – or should I say the second profession [laughter] – but it is important for us to remind ourselves that this is something that has been with us for 5000 years. I commented to you that today there are 0.00001% of people who are hunter gatherers and this is the region of the world that has still hunter gatherers and I am going to talk to a group that our Chairman used to come from, Australia, and also another group of people in Botswana, and ask ourselves the question – what does the observation of current hunter gatherers tell us about our past hunter gatherers and we come up with some interesting answers. This incidentally is a hunter gatherer group from Sri Lanka, where I was born, and I think the point I want to make is that as hunter gatherers we were dependent on a very large number of plant species, over 100 if you put them together, many different types of seeds, flowers, fruits, roots, tubers etc and even some types of mushrooms. Now the point is, that when we move from being a hunter gatherer to domestication of plants, we clearly reduce the number of plant species and today in the 21st century we have to feed about 6.5 billion people with about 17 staples, some of which you may not even have heard of, for example teff, which is only grown in Ethiopia and I'm sure some of you have not had the pleasure of eating taro if you have not lived in the South Pacific but I want to point out to you that the major players of our staples are the cereals, and of the cereals the point that I want to share with you is that this is the region of the world which is sadly the region which has got conflict now, which is the area around Mesopotamia where they domesticated legumes, especially the wheat and some of the cereals.

Now of the cereals of global importance, these six are the most important and I want to say without a shadow of doubt that wheat is the king of the cereals and I'll tell you why that is so in a minute. Wheat is the most versatile amongst all the cereals and we can produce well over 2100 different types of foods from one single cereal. That to me, ladies and gentleman, is a remarkable way in

which modern food processing has transformed a single crop into a food variety of unbelievable taste, texture and gustation and I want to say that the bakers and the food scientists are the modern day alchemists that transform the single cereal into this variety. And that is a very important point, wheat has provided us with an enormous food variety. We will never, ever have the food variety that we enjoy today if not for the ingenuity of the bakers and the processors to bake a whole range of gastronomic delights. I always make this point – who could believe that a noodle and a strudel could come from wheat? And it does. The point of this slide is to show that the nutrient composition is so different but they come from a primary source which is wheat. The reason why wheat is so flexible and versatile is because it is one of the few cereals that has got an extremely rich gluten ratio that allows you to transform it into different types of foods. Of course it also provides you with a whole range of micronutrients that you would never have if not for this transformation.

So I just want to end this part by saying bread and bread products have made a significant contribution to food variety but the second point is that it is also making a major contribution to our micronutrient requirements. I use the word very, very guardedly because it is not only bakery products that provide us with micronutrients, also the breakfast cereals, which is another area you are familiar with.

Now, many of us may have forgotten the role that food fortification has played for nearly 80 years in the combating of a major vitamin deficiency called pellagra. Pellagra used to be endemic in many parts of Europe and of course in parts of the United States of America and it was the fortification of flour from the 1940s onwards that transformed the eradication of pellagra. Pellagra is characterised by this chap having very bad dermatitis and is characterised by dermatitis, dementia, diarrhoea and the last D which is death, so it is a very serious disease caused by the lack of niacin and what was done in the early 30's was the fortification of flour which is with us today, so it is a very salutary reminder that the role of fortification in bread and flour has made an enormous contribution to health and well being not only in the UK but in Europe and many parts of north America. We can see here the dramatic fall in the number of cases of pellagra after the introduction of fortification from the early 30s as you see it coming down and this is just an example from the data from America and I'm sure we'll have a similar data if we did that for many parts of Europe. I want to propose to you, ladies and gentlemen, that food fortification with other nutrients, with other functional foods, is going to play a much more major role in all our societies today and I do hope that tomorrow there will be a more sensible and more balanced debate looking at fortification of folic acid in our flour. I'll leave that to the FSA to decide for us. I want to point out that I think that fortification is likely to play a much more important role in delivering nutrients especially in baked products, because baked products as you know very well is a staple of our lives.

Okay, so now we have looked at a brief historical perspective, let's move on to try and put the baked products in the context of health. When we talk about public health many of you will have heard of diabetes, obesity, cardiac disease, hypertension and cancer but I want to draw your attention to two areas that I think are going to play a major role in our 21st century. One is cognitive decline, cognitive decline that is attendant with ageing, that happens to all of us including me and I think this is something that we need to pay particular attention to in terms of health interventions through diet. The last one is depression. Now many of you may not have thought about how can diet influence depression, surely depression is the popular Prozac pill isn't it? But the fact that Prozac pills have little or no long term efficacy, my position, ladies and gentlemen, is that can diet alter the decline in cognitive performance and also provide some addendum to try and combat the major occurrence of depression in our society and I think baked products can play a role in that way.

When I was invited to speak, I was asked to talk a little bit about the glycaemic index which I am sure many of you are familiar with but I want to contextualise it in terms of baked products. Although the GI concept washed onto the shores of the UK about four or five years ago, as Brian will tell you it has been in Australia for about 15 years and in fact the GI concept is about 25 years today, because it was reported by two British scientists working in Canada so it is an old trick that has had a new lease of life. So what is the GI concept? It is a very, very simple concept and this is illustrated in this slide. What we have here is seven different sources of carbohydrate, identical amounts, fed to a group of subjects and you will see on the Y axis the blood glucose level on seven different carbohydrates. You will see that they divide into two different quadrants. If you feed glucose you have a very rapid rise in blood glucose followed by a sharp decline compared to feeding oatmeal or lentils, you have a very slow release of blood sugar. So basically this slide shows you in a very simple nutshell the concept of the glycaemic index. Glycaemic index essentially is a way of ranking foods based on how quickly the blood glucose rises. Foods that raise your blood glucose very quickly are called High GI foods and foods that raise your blood glucose modestly are called Low GI foods, as simple as that. This is a point I am going to come back to.

Now just to reiterate, you have a high GI and a low GI. Remember that GI is a ranking system so you can't have an absolute value because it is a ratio of the area of the curve of feeding a food that you are testing, divided by the area of a curve of 50g of glucose, so it is a ratio and that is why it is an important point to remind you that it is a ranking order. The classification we use is that foods with a GI value below 50 is called low GI and foods above 50 are called high GI, I haven't said medium because frankly I don't know what that means, it is neither here nor there so I would rather say that a food is high or low and that's what we will talk about.

Interestingly, although we in the UK have talked about GI in the past four to five years, in France Danone, a major player in many aspects of foods, has been producing a biscuit for breakfast that they call a low GI biscuit which they talk about the slow release of blood glucose for breakfast and this is a very successful biscuit that is being marketed and sold in many parts of Europe. So just to contextualise the classification, these are some values from our own laboratories. As many of you know, we have done in our lab over 450 different UK based foods for GI classification, for many of the retailers and food manufacturers, and that gives you some foods that are low GI, some that are medium – just to show you what they look like – and the high GI values.

Now as you well know as manufacturers that the glycaemic index can be altered by many, many factors, the proportion of [inaudible], the presence or absence of [inaudible] starches, particle size, cell structure, organic acids, fibre. Now what this slide tells you is that you as a manufacturer have a remarkable ability. If you so desire and you so wish to reformulate by simple adjustments foods that have a low glycaemic index, so it is something within the means of your reach and your competence because GI can be manipulated by one or more respects.

Now I want to ask you the question – how does a low GI diet affect diabetes, obesity and cardiovascular disease? Now given the brevity of my time I am going to concentrate on diabetes and obesity and the role that it plays in the low GI foods, especially baked ones. Despite all the claims made about the escalating worries about obesity which I think is true, I personally think that compared to diabetes, diabetes is a much more insidious and dangerous disease than obesity per se because I think obesity has been slightly inflated. [laughter] Sorry, I wasn't meaning to be funny but I personally believe that what the public hasn't been told is the disastrous consequence of undetected diabetes which many of us may have because as I've said to many of you before, you can't hide obesity – not as yet – but you can hide diabetes. And look at the numbers. In Europe alone we are 23 million diabetics that are diagnosed diabetics. For every diagnosed diabetic there are reported in the clinical literature that there are three undiagnosed impaired glucose tolerance or impaired fasting glucose tolerant, so they are on the journey towards becoming diabetic.

Unless you have a blood test done in the early morning to test whether your fasting blood glucose is about 5.5 millimols, you don't know if you have got pre-diabetic tendencies, so it is a real challenge. I want to pose to you, ladies and gentlemen, compared to obesity which I admit is an important issue, I think we are under playing the importance of diabetes and pre-diabetes management in our society. If you look at the prevalence of diabetics in Europe you come to some very, very startling results. You have up there – I can't even see what that is – Germany. Anybody from Germany here, you'd better not put your hands up. Oh, hello! Germany is number one. UK is down here but don't be too complacent because 4.5-5% of you have got clinically

diagnosed diabetes which means that 10-15% will have pre-diabetes [inaudible]. What that means is that we can ask, how can we manage and treat pre-diabetes and diabetes with diet? I think baked products are going to play a very important role because I believe convincingly that tablet or pharmacological intervention simply will not be able to actually make the interventions in countries like China and India, which as many of you are global companies – just to remind you that in China and India alone there are 66 million diabetics diagnosed which is the entire UK population.

So I want to start with what Jennie Brand-Miller in Australia did some years ago, she asked the question, if I put people with a diabetic condition on a low GI food, what happens to their HBA1C which is the predictor of your long term blood glucose? This is a study that she did some years ago and you can see here from the metanalysis that if diabetics are on a low GI diet, their HBA1C is consistently lower, suggesting that a low GI diet in diabetics at least has got a similar response of benefit as you would see if you were on a tablet based intervention for diabetics, so if you are gliclacide or metformin or rostagliclacide. What this tells you is that diet may have a role comparable to a pharmacological intervention provided you are able to keep it up for a reasonable period of time. So you might say to me well okay, that's quite an important observation but what's the big deal? I am not a diabetic. I may say to you, well you may be a pre-diabetic and you say to me, actually I am very healthy. I want to propose to you that even if you are healthy, feeding yourself on a low GI bakery product may be an important challenge and I want to share with you a study that was published about two months ago. The question we were asking is that can a simple dietary change to a low GI bread influence post prandial and fasting blood glucose because the critics of the low GI diets say to me it is such a mumbo-jumbo, eating all these baked beans and curly kale bean sprouts forever, because that's what you are telling us to eat on a low GI diet. I say no, not really. The question is, if by changing one of your dietary components, can you result in changing a blood glucose that is positive? What we did is use two breads that are on the market, a bakers multi seed that I know is sold in many retailers and the Warburtons All In One and I am delighted to say that two of the people from this company are present here, nothing personal. The point is that these are two breads that are low GI and we used them to simply ask the question: by changing that food, can you alter your glycaemic levels?

We took ten undergraduates and graduates in our laboratory and put them on a breakfast, lunch and supper, they had to eat bread three times, either the low GI bread or the high GI bread, but the important point is that if they ate toast with raspberry jam they had to eat it with the raspberry jam on a high GI. So in other words it was a cross-over trial, everything was kept the same, the fillings were kept the same and somebody said you changed the apple for a banana but clearly you had to have a low GI fruit and a high GI fruit otherwise the experiment would go a bit haywire. The point of my argument is that by changing one of the dietary components can you elicit a glycaemic response?

That was the question that we asked. We used for our study these 24 hour blood glucose monitors which have got a little probe that goes into your omentum, not very invasive I think, and this little machine about the size of a cigarette box will give you time phase measurements over a 48 period but we are measuring only for 24 hours, what was your blood glucose over the time phase of the experiment. This is what we found. On the high GI bread, after breakfast the blood glucose went up, came down, went up again at lunch, went down, went up again at supper and stayed stable all night and this was the fasting blood glucose the next day. On the identical diet but with a low GI bread, you had a similar profile but the amplitude, as you can see, is remarkably lower but most importantly the fasting blood glucose the next day was significantly reduced compared to eating a high GI bread over the same period.

You might ask me what is the significance of that low value overnight? It turns out that your fasting blood glucose, even if you are not a diabetic, is a very important predictor of your risk of stroke, ischaemic heart disease and cardiovascular disease. In other words, the lower your fasting blood glucose, the lower your risk of these three features. So in other words, even if you are a sceptic about GI and the role of diet, what I would say to you is try and keep your fasting blood glucose as low as possible because that appears to be a very good predictor of your health outcome for these three major killers in our society.

So the clinical message is that you have within your grasp an incredible opportunity not necessarily for everybody because clearly it is something that you have to decide in your own paradigm, but I want to propose to you that the glycaemic response concept is true, it's observable, it's reproducible and above all, the bread that you are able to consume tastes good as well. As somebody said, there is no point in making a bread that is highly nutritious but that tastes like cardboard. I think this allows us a tremendous challenge. I think the development of cereal based foods, breads, cookies, cakes, breakfast cereals, regulating and controlling blood glucose will become a major growth area and I'll come back to this theme a little while later.

So much about diabetes, I want to inevitably touch upon obesity because obesity as you know is in the public mind for several years. Just to remind you, Daniel Lambert came from Leicestershire and this was nearly 220 years ago, he was quite an obese chap but he lived to 39 years which was pretty good going for then. The point I am saying is that although we talk about obesity being a major public health concern in terms of prevalence, it has been thus for many, many centuries and of course I should point out that there are very large differences in the levels of obesity in many European countries, Scotland and Czech Republic being the number one.

Of course you know you cannot become obese overnight, thankfully, you can only become obese over a period of time and you become obese only if you

are [inaudible] so every single intervention strategy to reduce the risk of obesity has been to try and cut down your food intake. So you put people on a low calorie diet, or low fat diet and you obviously lose weight. The problem with low fat and low calorie diets is that there is no evidence from a public health perspective that low calorie diet consumption in the UK has reduced the prevalence of obesity. In other words, you are probably eating a low calorie or low fat diet Monday to Friday but surreptitiously you are eating a high fat diet on Saturday and Sunday and going to church as well. So the question is, can we find an intervention that will allow you to eat as much as you want but reduce your energy intake in a subtle and subliminal way because the key challenge is to find a way that will coax you into believing that you are full and therefore stop eating rather than eating a low fat food that makes you hungry after a while. I think an interesting challenging area would be looking at a low GI diet and there are many, many studies that have been published in the past and I want to spend some time sharing some papers that have been published in paediatrics about four years ago. This study was done in a primary school where we gave 39 primary school children in Oxford a breakfast of a low GI breakfast, a high GI breakfast, a low GI breakfast with sucrose and we asked the question – how do children given three different breakfasts on three different occasions select and eat food at lunch time and we were quite startled to find out that despite children eating three different breakfasts, when exposed to [inaudible] lunch intake, children were choosing by choice less lunch on a low GI breakfast. They were eating 150 calories less than on a high GI breakfast. So the question I want to post to you is, that and the other pose to you is that does this tell us that the manufacture of certain types of food, whether bakery, biscuits or cakes, can it alter satiety and appetite in a way that will make the consumer enjoy the food he is eating at this moment in time but in a metabolic and subliminal way, alter his food intake at lunch and supper? I think this is going to be a big area of challenge and intellectual opportunity for all of us in this room.

I now want to move on to an exciting study that was published by a Powlak's group in Harvard and the reason why I put this up is again it tells us something about the future. This study was done in rats as you can see, quite a small cohort, but these rats were given a high GI diet or a low GI diet for 17 weeks if I remember and of course they then killed them and did a lot of interesting things with them. Anybody from the animal rights movement here? I want to draw your attention to their body weight after 17 weeks on this trial. Notice that the body weights of the rats after 13 weeks was quite comparable but I want to draw attention to their body fat. The body fat of the rat fed the low glycaemic index diet was almost half of that of the high GI diet so the question is, ladies and gentlemen, can we manufacture food that we can give consumers that selectively not only reduces your rate of tissue deposition but also by some hormonal or metabolic way that we alter your insulin glucagon lipid product to reduce the way you deposit the adipose tissue. I think the challenge is to look at this because as you know, being fat per se is not a major risk factor, it is where you deposit your fat that is the most important so if

you or your partner is an apple, change him or her into a pear. It is not easy to do that and what I want to propose to you is can you manufacture foods that either selectively deposits adipose tissue in a pear shape fashion, not on the stomach, so that you will have a reduced cardiovascular risk outcome, hypertension and diabetes. I think that is an incredible challenge for us in this audience because manufacture of food that will partition tissue attrition I think is going to be a big area of interest and challenge.

So I have talked about diabetes, I have talked about glycaemic index, now I will move on to functional cereals. Chairman, how am I doing for time? Okay, thank you. I think if you see the way the consumer is responding and indeed the way the food manufacturers are responding, the days of using additives are slowly declining. Today Marks and Spencer's and Asda have announced that by the end of the year they are going to remove most of their flavours and colourings. I want to propose to you that cereals are a reservoir of enormously exciting functional ingredients and we have only scratched the surface right now. My first example is beta-glucides. Who would have thought of the miraculous cure that beta-glucides would have four years ago? Beta-glucides, as you know, are polysaccharides found in a whole range of cereals and beta-glucides are now being used by many, many food companies to do one of these three things – to control body weight, to lower blood cholesterol, enhance immune function, reduce blood sugar. I am giving this as a single example of a natural ingredient from the cereal base that is going to have an enormous contribution to make in a whole range of health outputs and public health use.

Second example I want to share with you is that many cereals have an acid called ferrulic acid. Ferrulic acid under conditions of proper heat and pressure can be converted to vanillic acid which is vanilla flavour so my proposal to you ladies and gentlemen, can we systematically look at functional foods that we can transform into new flavours, new compounds that have got texture, flavour, aroma without having to look at putting ingredients in from outside, which are in situ in the cereal. I think that cereals are a reservoir of enormous ingredients for use both for functional and other attributes.

What about whole grains? I think whole grains are going to take centre stage in the years to come and I think that whole grains are really going to make a big difference in the way we deal with diabetes, cardiac risk outcome and indeed things such as hypertension as well. Remember the classification as being based on having at least 51% whole grain in your product. Whole grains have a whole range of nutrients and I want to remind ourselves that whole grains are functional foods in a nutshell, absolutely true. I want to see and I hope it will happen in the next few years, that whole grains are thought of in the same sentence as fruits and vegetables. Five portions of fruits and vegetables, I want to see whole grains included in that because I think that whole grains have similar, in fact better properties than the functional attributes of fruits and vegetables. Just to remind you, if you look at the role of dietary

fibres, you can see quite small amounts of dietary fibres have a big effect on cholesterol if they come from [inaudible] oats or from barley, just to reflect on the fact that these functional foods are going to be more and more challenging in the years to come.

My next slide is just to remind you that when we talk about antioxidants, we tend to think about tea, fruits and vegetables as the major source of antioxidants but look at some of the whole grains and cereals, they are equally big in antioxidants and even in things like white bread and rice, so we need to actually highlight the fact that some of the foods that you manufacture may have similar antioxidant properties as the putative use of green tea or some fruits as a major contributor of antioxidants. I think this is just an example to point out that this is a big area of interest and challenge in years to come.

So what about the mechanisms, you might ask, that your functional foods might have in the prevention of cancer which is the last area that I want to talk about and I think it can be broken down into that they increase [inaudible] by increasing stool volume, they bind and reduce the risk of producing [inaudible] carcinogens, changing the microflora and also the fermentation of [inaudible] appears to have an effect so I am trying to share with you the fact that many of these properties that we use or have in our food products can be given a biological explanation as to why they do what they do and I think it is going to be a big area of challenge to try and translate this factual information into real science and I think people are going to look for science to drive some of your challenges and opportunities.

So what about the future? These are some reflective examples, I think [inaudible] grains for cancer prevention is going to be a big area of growth. Grain products that contain fibre, particularly soluble fibre for chronic heart disease are going to be increasingly an area of concern and something we hope to talk more about on Friday. I want to move on to this area because I think this is going to be one of the major challenges. How can we make foods, bakery products, in a broader sense that alter satiety? Satiety I think is going to be a major challenge for us in the next few decades and I think this is going to be an area that I believe there is going to be quite a lot of interest and also specialist products to manage obesity particularly looking at how we can alter tissue partitioning from central adiposity to peripheral adiposity and of course I think the future opportunities are limitless and large. I have talked about functional ingredients from cereals, I think there is a need for a systematic study in this area. We have talked about cereal production to alter type, baked products is a whole range of food ingredients [inaudible] that are so versatile and I think it is an area that is going to tax all our minds both intellectually and production wise, is how can we make products improve cognition. Specialist products for the elderly, isn't it quite interesting that by 2025 nearly 25% of the UK population are going to be over 65 years old. The question is, how can we package foods both literally and metaphorically, to meet the nutritional

demands, the gastric demands, the dentition demands, over people over 65 years old? I think that is going to be an important area.

Specialist food for women. This is going to be an area that I think will be of growing interest, despite the fact that 50% of the population are women, women have got particular nutritional needs that I think have not been addressed in any food sector and I think that is an area worth investigating and another area is infants and children. The common foods that you now buy are the little purees, that's quite interesting but I am not sure if it is very interesting to the infant, nobody has asked them. The question is, can we make products that are bakery based for infants and children?

So ladies and gentlemen, I have had a long canter through and I want to point out that cereals and cereal products have had an unbroken record of use for nearly 5000 years and I want to say that those assembled here are really the custodians of that commitment and I think it is a great privilege to talk to you who have been an unbridled connection for almost 5000 years of history, of looking at bakery products and I think the challenges you have are enormous and the opportunities are incredible and I think in the words of Orange, the future is certainly bright. Thank you very much.

[Applause]

BRIAN ROBINSON:

Thanks very much Professor Henry. If you would like to join me up here, you are not escaping from me yet. Professor Henry has very kindly offered to take any questions, I think we can tell the passion that he has for his particular area so I now invite any questions. I would ask that you please say your name and the company that you work for, thank you.

ROSS WARBURTON:

Ross Warburton from, well it's obvious where I come from isn't it? [Laughter] Jeya, we were talking earlier about your time as a board member of the FSA and obviously Deirdre was very coy about the issue of folic acid addition. In your opinion how do you think the FSA board will vote and after you have answered that one can you tell me how you think it should vote?

JEYA HENRY:

I think you have put me on a complete spot. I might have to change my tack by asking Andrew Wadge to come in on this but if I could take a personal view on this. Based on the analysis of the literature and the public health outcome that fortification of folic acid would have, my personal view is that the fortification with folic acid would be something I would want support for. Looking at it from a global perspective as well, there is good evidence from North America, Canada, recently from Chile, that the fortification with folic acid does have a contributory role in reducing spina bifida and also perhaps in trying to increase your homocysteine level which is a risk factor in the risk of heart disease. That

is my personal view and just to put it on record, when I was a board member in 2002 when this discourse was on display I voted for fortification and that's my view, I stand by it even in 2007.

BRIAN ROBINSON:

Thank you. Any other questions?

ALEX WAUGH:

Alex Waugh from nabim. Jeya, you talked about glycaemic index and at various times in the discussion you talked about whole grain foods and fibre. I wondered to what extent you think that when we talk about low GI foods, whole grain foods and high fibre foods, we are actually talking about the same thing, how much overlap there is between those three different ideas in terms of the diet?

JEYA HENRY:

A very good question. Unfortunately I think we need to have some degree of separation and articulation in using those terms because all whole grain foods are not low GI and not all low GI foods will have the same amount of dietary fibre that a whole grain food has, that is the first point to make. The second point to make is I think I was very cautious in what I said, it is not a panacea for everybody to say I will start making low GI breads but my view is that the low GI breads as a part of a palate does have a role to play in our society in terms of managing glucose rest points. That does not mean you should abandon eating whole grain foods or wholegrain breads but the challenge for us it to find a way in which this is part of an overall range of food options that you have that the consumer can choose and decide to eat in the long term.

BARBARA GALLANI:

Barbara Gallani from the British Retail Consortium. I was also interested in the presentation on GI and on the functional foods and my question is, do you think there is enough evidence to go through the scrutiny of the EFSA and the [inaudible] procedure to allow claims to be made on this functionality?

JEYA HENRY:

I think that's a fair point. What I believe very strongly is that the day has come where using ingredients which are already present in the cereal, so for example beta-glucon is a good case in point. I do not think that EFSA or anybody can challenge the scientific evidence that beta-glucon has in terms of metabolic outcome but this is what I'm arguing for, is that I don't think that we have systematically looked at what is within our cereal grain in an exhaustive way to find out, to give a simple example, why should we add a polyol which is completely manufactured, into a bread, that is completely synthetic when we have a food system that can do the same effect as a polyol? So my argument is that we need to look at the natural ingredients in the cereal in a much more systematic fashion so that we can have a better way to get approval through

the EFSA or the FSA much more coherently and easily because that's a better route of strategy.

BRIAN ROBINSON:
Any other questions?

JONATHAN CHOAT:
Jonathan Choat from Nexus. I appreciate from Dame Deirdre's point of view that it is essential that all the food industries should be seen to be doing something about contributing towards the rash of obesity that affects us and many other nations of course throughout the world and therefore doing small things, taking salt out, reducing sugar etc, etc, etc, is seen to be a good thing to do. Do you really think this is going to have an effect on the number of people eating too much? We eat too much and we expend too little energy.

JEYA HENRY:
Sorry, I didn't catch the last part of your question.

JONATHAN:
Do you think the effects of removing this bit and that bit and adding a little more here, will actually have an effect on the total obesity or the total number of people who are obese in the population?

JEYA HENRY:
If you ask me for a short answer it is probably no but in terms of public health interventions, my personal view is that dietary interventions are going to make a contribution but where we tend to bury our heads or attempt to bury our heads is nobody says in the same breath what about exercise, what about physical activity? Because what you hear very rarely is that if you are fat but fit, you have little or no increased risk outcome so if you are overweight or obese but you are physically fit, if you can manage to do that, then there is no risk from the obesity so what my argument is, is that just to peg on overweight as a public health issue without looking at what are the other element that go into that energy balance equation is maybe being, not disingenuous but actually burying your head in the sand. That is my personal view.

BRIAN ROBINSON:
Any further questions?

ANDREW WILLIAMS:
Andrew Williams from British Baker. You mentioned the need for food manufacturers to address cognitive decline, my question is how can bakers stop people from getting depressed?

JEYA HENRY:
Oh, I don't know is the short answer, I really don't know but I am raising that because the connection between diet and mood and behaviour, if you look at

the ancient Chinese or Indian texts, they make it very clear and I think that we haven't got that into our parlance or vocabulary in this part of the world saying can diet make a difference to mood and cognition, so I am simply throwing that as a challenge rather than definitively saying that can happen. If you look at some work done about thirty years ago by a chap called Furnstorm in MID, he showed that by altering your protein to carbohydrate ratio, you can alter the production of tryptophan that goes into the brain so you produce more serotonin and you get quite sleepy so you can see why you go to sleep when the Queen comes on TV, it is not because she is boring but because of your Christmas dinner, because you had a high protein, high carbohydrate diet and you become soporific. So there's the connection. [Laughter]

BRIAN ROBINSON:

No further questions? Okay, Professor Henry, as always, we really appreciate you coming here today and sharing your enthusiasm and passion for your subject. As always you leave us with a challenge, an interesting thought. That finishes the first part of the session, so thank you very much.

[Applause]

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