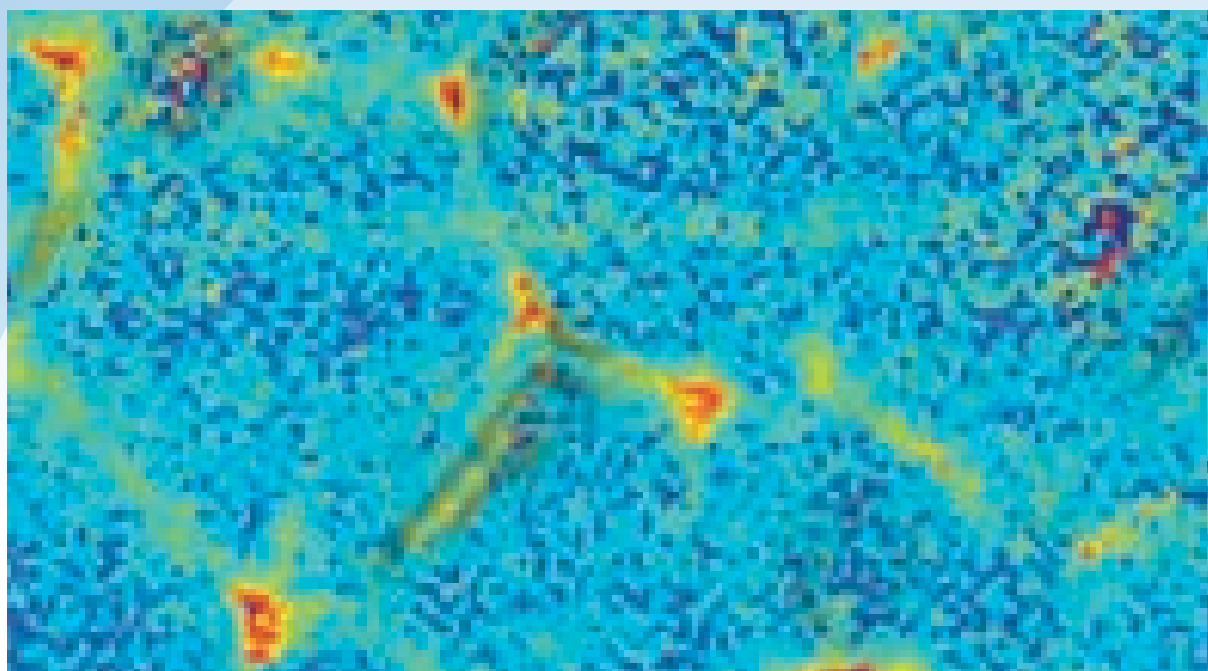





# Healthy food

## *How to stick to a healthy diet*



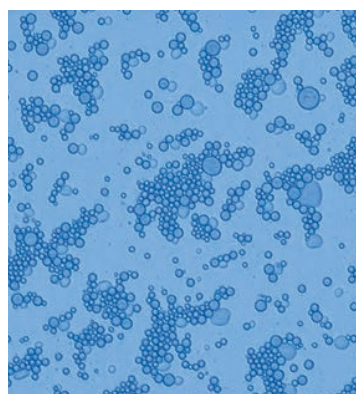
Institute of Food Research

 **Nearly a quarter of adults and 10% of children are classed as obese in the UK. Scientists are studying the structure of food during production, cooking and digestion to make it healthier and tastier.**

Fats are present in an emulsified form in many foods, such as dairy products, soups and sauces that possess a texture and taste that are very difficult to replace. Scientists are working to understand the fundamental mechanisms that control the viscosity and texture of emulsions, so that fat content of food can be reduced while maintaining the taste. This new knowledge will enable the development of foods that could help reduce weight gain and the onset of obesity.

Researchers are investigating interactions at a molecular scale in order to alter the “consistency” of foods and using mathematical models of emulsion droplets to understand how food structure and the composition of saliva influences sensory properties of the food. This could lead to innovative ways of reducing fats in everyday foods such as mayonnaise.

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The molecular mechanisms of fat digestion are also being studied in order to find ways of reducing appetite and controlling the absorption of fat molecules from our food.

Modified starches are produced by physical, chemical or enzymatic treatment of starch and are used as emulsifiers and thickening agents, often in low-fat foods to replace fat and provide more structure. Starches resistant to digestion have many health benefits and researchers are looking at the fine structure of starch granules in order to understand their resistance to digestion. This could help to develop ingredients and foods with lower glycaemic index and other health benefits.

# Activity

## *Is it a liquid or is it a solid?*

### What you will need:

-  Cornstarch
-  Measuring cup
-  Mixing bowl
-  Spoon

### What to do:

1. Place one cup of cornstarch in a large bowl
2. Add  $\frac{1}{4}$  to  $\frac{1}{2}$  a cup of water and use the spoon to mix it into a thick paste
3. The powder is a solid. The water is a liquid.

#### Is the mixture a liquid or a solid?

4. Knead the mixture with your hands. How does it feel? Does it become firm when you knead it?

#### Is it a liquid and a solid?

5. Take a handful of the mixture and hit it with your hand or the spoon. Does it feel hard or even crack?
6. Leave the mixture to return to its original form
7. Push your fingers slowly into the mixture and pick it up. Does it pour through your fingers like a liquid?

### Explanation

Some substances have two forms. Corn starch has dilatancy; it is a liquid that forms a solid when pressure is applied. The opposite is thixotropy; a liquid that becomes more liquid when it moves. Ketchup has thixotropy. Try shaking a bottle of ketchup (with the lid on) and see if it becomes runnier.