

Olive Oil Makes You Feel Full

Source: Technische Universität München

Reduced-fat food products are gaining in popularity. More and more people are choosing “light” products in an attempt to lose weight, or at least in the hope that they will not gain any pounds. But whether these products are effective or not is a matter of dispute: While it is true that they contain fewer calories, people tend to overcompensate by eating more if they do not feel full. Now a study has shown how “natural” oils and fats regulate the sensation of feeling full after eating, with olive oil leading the way. So what makes this oil so effective?

Work groups at Technische Universität München (TUM) under Prof. Peter Schieberle and at the University of Vienna under Prof. Veronika Somoza studied four different edible fats and oils: Lard, butterfat, rapeseed oil and olive oil. Over a period of three months, the study participants ate 500 grams of low-fat yoghurt enriched with one of the four fats or oils every day – as a supplement to their normal diet.

“Olive oil had the biggest satiety effect,” reports Prof. Peter Schieberle, Head of the TUM Chair of Food Chemistry and Director of the German Research Center for Food Chemistry. “The olive oil group showed a higher concentration of the satiety hormone serotonin in their blood. Subjectively speaking, these participants also reported that they found the olive oil yoghurt very filling.” During the study period, no member of this group recorded an increase in their body fat percentage or their weight.

Aroma is the key

“The findings surprised us,” admits Schieberle, “because rapeseed oil and olive oil contain similar fatty acids.” The researchers decided to turn their attention to a completely different type of substance – the aroma compounds in olive oil. In the second part of the study, one group was given yoghurt with olive oil aroma extracts and a control group was given plain yoghurt.

The results were conclusive: The olive oil group’s calorie intake remained the same, but the control group had been consuming an extra 176 kilocalories per day. Schieberle explains: “The aroma group adapted their eating habits – but the control group participants were obviously not able to do likewise. We also found that in comparison to the other group, the control group had less of the satiety hormone serotonin in their blood.”

Direct impact on blood sugar level

How long the feeling of satiety lasts after eating depends on a number of factors, but blood sugar level is particularly significant. The faster it falls, that is to say, the faster the somatic cells absorb glucose from the blood, the sooner the person will start to feel hungry again. In the next part of their study, the researchers investigated which of the aroma substances present in the oil are most effective at inhibiting glucose absorption.

The researchers used olive oils from Spain, Greece, Italy and Australia for their study. The research team managed to identify two substances that reduce the absorption of glucose from the blood in liver cells: Hexanal and E2-Hexenal. They also discovered that Italian olive oil contained larger amounts of the two aroma compounds.

“Our findings show that aroma is capable of regulating satiety,” concludes Schieberle. “We hope that this work will pave the way for the development of more effective reduced-fat food products that are nonetheless satiating.”

Publication:

P. Schieberle, V. Somoza, M. Rubach, L. Scholl, M. Balzer; Identifying substances that regulate satiety in oils and fats and improving low-fat foodstuffs by adding lipid compounds with a high satiety effect; Key findings of the DFG/AiF cluster project “Perception of fat content and regulating satiety: an approach to developing low-fat foodstuffs”, 2009-2012.

Further information:

University of Vienna, Department of Nutritional and Physiological Chemistry, Christian Doppler Laboratory for Bioactive Aroma Compounds:
npc.univie.ac.at/home/cdl-fuer-bioaktive-aromastoffe/

German Research Centre for Food Chemistry: www.dfal.de/startseite/genusswert.html