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Meat Found to Elevate, Fish to Lower Colorectal Cancer Risk

Those who like to eat ham and brats every day, significantly increase their risk of getting colorectal cancer. In contrast, if fish is a regular part of one's diet, colorectal cancer risk is lowered. Earlier investigation results had already suggested these interrelations. The evaluation of a study with about half a million participants has now confirmed the hypothesis.

Study participants from ten European countries have been questioned about their dietary habits and lifestyles since 1992 in a study named "EPIC" (European Prospective Investigation into Cancer and Nutrition). These data are studied in relation to the incidence of new cancer cases among participants. EPIC study centers in Germany are: the German Cancer Research Center (**Deutsches Krebsforschungszentrum, DKFZ**), Heidelberg, and the German Institute of Human Nutrition (**Deutsches Institut für Ernährungsforschung Potsdam-Rehbrücke, DIfE**).

Epidemiologists of the International Agency for Research on Cancer (IARC) in Lyon, France, which coordinates EPIC, jointly with colleagues from other EPIC study centers, have now published results on the relationship between meat and fish consumption and colorectal cancer risk. The analysis is based on 1.329 cases of rectal and colon cancer that have been newly diagnosed among participants since the study was started.

Study subjects who had eaten a lot of what is called "red" meat (i.e., pork, beef, veal, and lamb) or such meat products were diagnosed with colorectal cancer more often than persons who ate only little of it. With fish, things are exactly opposite: Those who ate a lot of fish were found to have a significantly lower colorectal cancer risk compared to those with a low fish consumption. The consumption of poultry played no role for colorectal cancer incidence.

Researchers estimate that the risk of colorectal cancer increases by 49% per 100 grams of daily consumed "red" meat. An increase in daily sausage consumption by 100 grams elevates the risk even by 70%. In contrast, 100 grams more fish daily reduce the disease risk by one half.

These figures take account of the influence of different factors such as gender, body weight, alcohol consumption, physical exercise or smoking on the disease risk. In addition, the data were processed using a method that reduces inaccuracies in the information provided by study participants on their dietary habits.

The scientists propose different explanations for the influence of the consumption of meat and meat products on colorectal cancer development. Recent studies suggest that the intake of iron contained in meat may contribute to risk elevation, because iron can promote the formation of harmful nitroso compounds in the body. On average, "red" meat or meat products have a higher iron content than poultry, which may explain why consumption of the latter may not have influenced colorectal cancer risk in this study. The protective effect of fish consumption may be caused by specific long chain, polyunsaturated omega-3 fatty acids.

Regarding meat and meat products, the results now published confirm evidence provided by earlier studies. They also provide renewed evidence suggesting a positive role of fish in human nutrition. This is how Professor **Heiner Boeing** and PD Dr. **Jakob Linseisen**, EPIC study directors in Potsdam and Heidelberg, commented the results. These results should alert the Germans, said the experts: Germany ranks first in the consumption of sausage

products in Europe. Thus, the Germans would benefit most from reducing their sausage consumption.

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Contact:

Prof. Dr. Heiner Boeing

Deutsches Institut für Ernährungsforschung
Potsdam-Rehbrücke (DIfE)
Dept. of Epidemiology
Arthur-Scheunert-Allee 114-116
D-14558 Nuthetal
Germany
Tel: ++49 (0)33200 88 710
E-Mail: boeing@mail.dife.de

PD Dr. Jakob Linseisen

Deutsches Krebsforschungszentrum
(DKFZ)
Div. of Clinical Epidemiology
Im Neuenheimer Feld 280
D-69120 Heidelberg
Germany
Tel.: ++49 (0)6221 42 22 00 / 02
E-Mail: j.linseisen@dkfz.de

Dr. Gisela Olias

Deutsches Institut für Ernährungsforschung
Potsdam-Rehbrücke (DIfE)
Office of Press and Public Relations
Arthur-Scheunert-Allee 114-116
D-14558 Nuthetal
Germany
Tel.: ++49 (0)33200 88 278
E-Mail: presse@mail.dife.de
www.dife.de

Dr. med. Julia Rautenstrauch

Deutsches Krebsforschungszentrum
(DKFZ)
Office of Press and Public Relations
Im Neuenheimer Feld 280
D-69120 Heidelberg
Germany
Tel.: ++49 (0)6221 42 2854
E-Mail: presse@dkfz.de
www.dkfz.de

The task of the Deutsches Krebsforschungszentrum in Heidelberg (German Cancer Research Center, DKFZ) is to systematically investigate the mechanisms of cancer development and to identify cancer risk factors. The results of this basic research are expected to lead to new approaches in the prevention, diagnosis and treatment of cancer. The Center is financed to 90 percent by the Federal Ministry of Education and Research and to 10 percent by the State of Baden-Wuerttemberg. It is a member of the Helmholtz Association of National Research Centers (Helmholtz-Gemeinschaft Deutscher Forschungszentren e.V.).

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