

## Can processed and red meat cause cancer? The World Health Organization's classification raises concerns

On 26 October 2015, the International Agency for Research on Cancer (IARC), which is part of the World Health Organization (WHO), announced that it has classified processed meat as 'carcinogenic to humans', and red meat as 'probably carcinogenic to humans'. Stakeholder responses have varied from putting things into perspective, to criticising the decision, to cautioning against alarmist reactions.

### Background

An IARC Working Group of 22 experts from 10 countries [has classified](#) processed meat consumption as *carcinogenic to humans* and that of red meat as *probably carcinogenic to humans*, after having analysed more than 800 studies, including large ones conducted over the past 20 years. Details of the experts' findings have been published in an article in [The Lancet Oncology](#) journal, ahead of the release of the full report in the IARC Monographs series.

#### *IARC classification*

IARC [classifies](#) carcinogens, or cancer-causing agents, in five categories, ranging from *carcinogenic to humans* (Group 1) to *probably not carcinogenic to humans* (Group 4). The classification describes the strength of the scientific evidence as to whether an agent has the potential of causing cancer ('hazard'), but does not assess the likelihood that cancer will occur as a result of exposure ('risk').

#### *What is meant by processed and red meat?*

'Processed meat' [refers](#) to meat that has been transformed through salting, curing, fermentation or other processes to enhance flavour or improve preservation. Examples include ham, bacon, sausages and hot dogs, as well as canned meat and meat-based sauces. 'Red meat' refers to unprocessed mammalian muscle meat, for example beef, veal, pork, lamb, mutton, horse and goat.

#### *IARC Working Group findings*

Processed meat consumption was classified in Group 1 based on 'sufficient evidence' that it causes colorectal (bowel) cancer in humans. The assessment concludes that there is a statistically significant relationship between increased consumption of processed meat and risk of colorectal cancer. Links were also found between the consumption of processed meat and stomach cancer.

Red meat consumption was classified in Group 2A based on 'limited evidence' that it causes cancer in humans. The strongest evidence was observed for colorectal cancer, but with associations also seen for pancreatic and prostate cancer. It was nevertheless conceded that for the consumption of red meat, 'chance, bias, and confounding' (i.e. other explanations for the observations) could not be ruled out with the same degree of certainty as for processed meat consumption.

Additionally, it was found that the risk of cancer generally increases with the amount of meat consumed, although the data available did not make it possible to draw conclusions about whether a safe level exists. It was pointed out that meat processing, such as curing and smoking, can produce cancer-causing chemicals, and that cooking at high-temperature by pan-frying or grilling generally produces the highest amount of such chemicals. It was also emphasised, however, that red meat contains important micronutrients such as B vitamins, iron and zinc.

Overall, the assessment recognised that the increase in risk for the individual is small, but could, from a public health point of view, be important, given that many people worldwide eat a lot of meat.

### *Critiques*

[Critics](#) argue that IARC has merely considered potential hazards and not actual risks associated with exposure to an agent (i.e. it has undertaken a 'hazard identification', not a 'risk assessment'), in other words, it does not say anything about how potent an agent is in causing cancer, but only whether it does so or not.

### **Some stakeholder reactions**

#### *Research institutes and experts*

According to the French National Cancer Institute (Inca), the results are [not surprising](#), since oncologists have been arguing for years that eating too much meat and transformed meat products can cause colorectal, prostate, ovarian and lung cancer. For the Italian Association of Medical Oncologists (AIOM), the results [confirm](#) what has been known for some time, namely that the presence of preservatives or combustion products in these foods is linked to certain cancers. It considers the findings as 'an invitation to return to the Mediterranean diet, which has been shown to lessen the risk of cancer'. The Spanish Nutrition Society [reckons](#) that as a source of vitamins, proteins and minerals beneficial to health, meat has to be part of the diet, but its consumption should be 'occasional'. The British Dietetic Association (BDA) [clarifies](#) that although the findings sound 'alarming', consumption of red and processed meat causes an estimated 3% of cancers, compared to 19% caused by smoking. BDA adds that IARC's decision does not mean cutting out red and processed meat altogether, but rather eating moderate amounts as part of a balanced diet. Cancer Research UK [explains](#) that the higher risk shown by the results is in fact a relative risk, and interprets the Working Group's findings to mean that '...among 1 000 people who eat the most processed meat, you'd expect 66 to develop bowel cancer at some point in their lives – 10 more than the group who eat the least processed meat'.

#### *European Union meat industry*

The Liaison Centre of the European Associations of Meat Manufacturing Industries (CLITRAVI), 'strongly [rejects](#)' the new classification, considering it 'inappropriate to attribute any single factor to an increased risk of cancer'. This 'very complex subject' may depend on a combination of many other factors such as age, genetics, diet, environment and lifestyle. 'It is not just one specific food group by itself that defines the risks associated with health, but the diet as a whole, together with any of the other factors.' Fenavian, an association representing the Belgian meat-processing industry, [emphasises](#) that meat remains an essential element of a balanced diet, and that removing it could result in a lack of protein, iron and other essential nutrients. The Federation of the German Meat Industry (BVDF) [underlines](#) that cancer is not due to any one single food, but results from other factors such as genetic predisposition, environmental influences and lifestyle, as well. The Dutch Meat Manufacturers' Association (VNV) [disagrees](#) with the IARC conclusions, its arguments reflecting those of the Belgian and German associations. The Italian farmers' organisation Coldiretti [declares](#) 'no to meat terrorism', decrying the 'alarmist campaign' set in motion. The UK Meat Advisory Panel [believes](#) that 'red and processed meats do not give you cancer' and that because of its 'high protein content and rich nutritional composition', it has a 'valuable role within a healthy, balanced diet'. The UK Agriculture and Horticulture Development Board (AHDB) [stresses](#) that the scientific evidence IARC has evaluated suggests that the potential increase in risk from eating red and processed meat 'is actually very small'.

#### *Government bodies*

French Agriculture Minister, Stéphane Le Foll, [has cautioned against](#) yielding to panic, saying the findings confirm what is already known. Instead of a complete ban on eating meat, he advocates a reasonable approach, with recommendations on the frequency of consumption. The Food Safety Authority of Ireland [has underlined](#) that 'red and processed meats should not be treated as an everyday food', since 'definitely high intake, particularly of processed meat, is associated with colorectal cancer'. Maltese Prime Minister, Joseph Muscat, [has expressed](#) his concern at the WHO's decision to classify processed meat as carcinogenic, and calls for a wide debate. Spanish Health Minister, Alfonso Alonso, [has appealed for](#) calm and for avoiding alarm, underlining the virtues of a varied and balanced diet and of keeping a healthy weight. Sweden's National Food Agency [intends to](#) analyse the findings in detail before deciding whether or not to adjust current national advice on eating processed meat.