

# Higher diabetes risk from eating meat

Study on factors in common chronic diseases involved more than 45,000 ethnic Chinese since 1999

✓ **CLARA CHONG, THE STRAITS TIMES**

Eating meat every day puts ethnic Chinese adults at increased risk of diabetes, a study here has found, echoing research that has mainly been conducted on Westerners so far.

The study, which has tracked 45,411 people since 1999, found that a median daily consumption of just one serving of red meat or poultry – about three tablespoons – increases the risk, by 23 per cent and 15 per cent, respectively.

The culprit is the dietary heme iron content found in meat and poultry, said the senior author of the study, Professor Koh Woon Puay from the Duke-NUS Medical School.

Red or dark meat, such as

beef, mutton and pork, contains a relatively high amount of myoglobin protein, which carries heme iron for binding oxygen.

Heme iron is more quickly absorbed by the body but can lead to oxidative stress, damaging tissues such as those that produce insulin in the pancreas.

The more myoglobin there is, the darker the meat.

Some parts of chicken, such as the thigh, are also considered dark meat.

While heme iron is found only in meat, poultry, seafood and fish, non-heme iron is found in both meat and also plant-based foods such as dark green vegetables, nuts and seeds.

The Duke-NUS study is of Singapore Chinese citizens and permanent residents aged be-

tween 45 and 74 when they were recruited between 1993 and 1998.

They were interviewed twice about their diet using a questionnaire that covered 165 food items, including 33 that had meat.

The large-scale cohort study seeks to determine the impact of dietary and other environmental factors in common chronic diseases, such as cancer and diabetes, among Singapore Chinese adults.

Factors taken into account included total food intake, smoking status, alcohol consumption, body mass index, physical activity, history of hypertension and adherence to a diet high in vegetables, fruit and soy.

Out of the 45,411 participants,

none of whom had diabetes at the start, 5,207 were found to have diabetes after 11 years of study.

The average meat consumption in Singapore is about 97g a day and Prof Koh said cutting down one's intake of meat was a good step to take.

"We don't need to remove meat from the diet entirely.

"Singaporeans just need to reduce the daily intake, especially for red meat, and choose chicken breast, fish or shellfish, or plant-based protein food and dairy products, to reduce the risk of diabetes," she said.

Similar findings had been previously reported in western studies, but this is the first representative study for Asians.

A Harvard study in 2011 had

showed that a daily serving of red meat increased the risk of adult-onset diabetes by 19 per cent.

Though other ethnic groups were not included in the study, Prof Koh predicts a similar result.

Dr Annie Ling, Director of Policy, Research and Surveillance Division of the Health Promotion Board (HPB) said: "These findings affirm HPB's recommendation to consume red meat in moderation, and that a healthy and balanced diet should contain sufficient and varied protein sources, including healthier alternatives to red meat such as fish, tofu and legumes."

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