

# S'pore study confirms red meat and diabetes link

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**SINGAPORE** – A higher intake of red meat and poultry is associated with a higher risk of diabetes among Chinese Singaporeans, a study by Duke-NUS Medical School has confirmed.

Measuring the link between diabetes risk and red meat in a South-east Asian context for the first time, the Singapore Chinese Health study looked at the different types of red meat consumed, the different styles of cooking used, as well as the different risk profiles of Singaporean consumers.

In the study — published on Aug 22 in the *American Journal of Epidemiology* — researchers discovered that consumers with a higher intake of red meat had a 23 per cent increase in risk of diabetes compared to those with a lower intake, while those who consumed more poultry had a 15 per cent increase in risk of diabetes.

On average, participants with a higher red meat intake consumed about 50g of the protein daily (about four times the amount consumed by those who ate the least red meat) while those who consumed more poultry ate about 36g of the protein daily (about six times the amount consumed by participants who ate the least poultry).

The team also discovered that a form of dietary iron called heme-iron, present in greater amounts in red meat and poultry than fish and shellfish, is accountable for the increase in diabetes risk.

Heme-iron is carried by the richly pigmented, oxygen-binding protein myoglobin, which acts as a source of energy for the muscles.

The more myoglobin present in the muscle, the redder, or darker, the meat. Myoglobin or heme-iron is found



A meat market in Beijing. In a Singapore health study, researchers found that consumers with higher intake of red meat had a 23 per cent increase in risk of diabetes compared to those with a lower intake. PHOTO: REUTERS

in larger concentrations in red meat — such as beef, lamb and pork — as well as chicken drumsticks and thighs. Fish, on the other hand, is mainly white meat.

“We don’t need to remove meat from the diet entirely,” said Professor Koh Woon Puay, the senior author of the study, at a media briefing yesterday. “Singaporeans just need to reduce the daily intake, especially for red meat, and choose chicken breast and fish or shellfish, or plant-based protein food and dairy products, to reduce the risk of diabetes.”

Her team’s findings are in line with overseas studies done on diabetes risk, notably one by Harvard researchers in 2011 that found a daily 100g serving of red meat increased the risk of adult onset diabetes by 19 per cent. The same study re-

vealed that substituting red meat with nuts, low-fat dairy products and whole grains was associated with a significantly lower risk.

The Singapore study involved about 45,000 Singaporean Chinese citizens and permanent residents aged 45 to 74.

They were recruited between 1993 and 1998 and given a food frequency questionnaire on 165 food items and beverages.

Participants were then interviewed at six-year intervals, up until 2010, on their health status — or up until the point they had diabetes.

During the study, diabetes was identified among some 5,200 individuals.

On the ethnicity of the study’s participants and whether the results were applicable to other ethnic groups,

## POULTRY EATERS AT LOWER RISK

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Prof Koh said: “One of our limitations was that our study cohort was all of Chinese descent, but this is also a strength, as we know the findings are not affected by culture or genes.

“Our research is also consistent with other Western findings, so I’ve no reason to believe that Malays and Indians will have different results.”

Using samples from the same study, Professor Koh is currently conducting further research to determine the relationship between diabetes risk and other chemicals found in red meat.

The study was supported by the National Research Foundation Singapore under the Clinician Scientist Individual Research Grant, administered by the Ministry of Health, and the United States’ National Institutes of Health.