

# Red meat metabolite levels high in acute heart failure patients, research shows

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Patients with acute heart failure often have high levels of the metabolite trimethylamine N-oxide (TMAO) – of which red meat is a major dietary source - according to researchers from the University of Leicester.

Red meat, which has been reported to be associated with cardiovascular disease, is a source of L-carnitine which is broken down by gut bacteria to form TMAO.

In previous studies TMAO has been associated with mortality risk in [chronic heart failure](#) but this association in acute heart failure is still unknown.

The team, led by Professor Toru Suzuki from the University of Leicester's Department of Cardiovascular Sciences and PI within the Leicester Cardiovascular BRU, measured circulating TMAO levels in approximately 1,000 patients admitted to University Hospitals of Leicester NHS Trust with acute heart failure.

The study, published in the journal *Heart*, was the first to investigate association of TMAO levels in acute [heart failure patients](#), a condition associated with high mortality and morbidity – and suggests involvement of the gut microbiota and diet in outcomes of acute heart failure.

This study shows an association between circulating levels of a metabolite of this process with prognosis of acute heart failure.

Professor Suzuki said: "Patients with acute heart failure showed [higher levels](#) of the oxidised metabolite TMAO in those that died or had a repeat admission to hospital with heart failure within the first year.

"Our study shows that higher levels of TMAO, a metabolite of carnitine derived from [red meat](#), is associated with poorer outcomes associated with [acute heart failure](#), one of the main diseases of the

heart.

"This metabolic pathway provides a possible link between how red meat is associated with heart disease."

**More information:** Toru Suzuki et al. Trimethylamine -oxide and prognosis in acute heart failure , *Heart* (2016). [DOI: 10.1136/heartjnl-2015-308826](#)

Provided by University of Leicester

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