

SPINACH RESEARCH GOES VIRAL

Researcher's findings on making vegetable safe for infants gain attention

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MALAYSIAN researcher Dr Noor Liyana Yusof is fast becoming an Internet phenomenon, thanks to the research findings from her PhD thesis, which made headlines in Swedish newspaper *Sydsvenskan* earlier this month.

Noor Liyana, 30, who recently completed her doctoral studies in food technology at Lund University in Sweden, sought a way to make spinach safe to be consumed by young children, particularly infants.

The article on her findings is going viral on social media platforms, including Facebook.

Spinach is a nutritious vegetable, but not recommended for infants because of its nitrate content.

Noor Liyana's thesis, *Vacuum Impregnation of Spinach Tissue: Metabolic Consequences and their Potential Industrial Applications*, presents a simple method capable of reducing the nitrate



Malaysian researcher Dr Noor Liyana Yusof made headlines in a Swedish newspaper over her research on how to make spinach safe to be consumed by children.

content in spinach by up to 70 per cent.

Nitrate is a common nutrient for plants and is present in other leafy green vegetables, such as arugula (rocket salad) and chard (related to sugar beet). Nitrate can be converted into toxic substances when processed in our bodies, which reduces the transport of oxygen, especially in infants.

Noor Liyana developed a method, via the use of sugar and vacuum, which modifies the metabolism in the spinach leaves in such a way that nitrate is broken down.

The method, the newspaper report said, stimulated the meta-

bolic activity by which the leaves converted nitrate into proteins.

The energy needed to do this is normally retrieved from the leaf's store of ordinary sugar.

"Placing the leaves in a sugar solution and then vacuum-treating them forces the sugar molecules to get into the leaves, stimulating their metabolism, so that the nitrates are reduced," said Noor Liyana in the interview.

The process does not make the spinach more calorific, as the sugar molecules are metabolised with the nitrate. The type of sugar used is of no consequence.

She said the technique was cost-efficient, and vacuum treat-

ment was already used to pre-treat fruit and vegetables.

Noor Liyana's study of the metabolism of spinach was conducted in collaboration with supervisor Federico Gomez, food technology senior lecturer, and Allan Rasmusson, plant physiologist at the Department of Biology, Lund University.

Noor Liyana hails from Kuala Terengganu. She obtained a degree in food science and technology from Universiti Putra Malaysia (UPM) and a master's in food technology from Wageningen University in the Netherlands.

She is now at UPM as a lecturer and researcher.