

Turning papaya leaf into a cure for dengue fever

30 April 2018, by Emma Rayner



Credit: University of Nottingham

A traditional herbal remedy for the dangerous tropical disease 'dengue fever' could be turned into a pill to treat patients thanks to groundbreaking research by scientists at the University of Nottingham's Malaysia Campus (UNMC).

Papaya leaf juice has for a long time been used in some areas of India and South East Asia as a treatment for [dengue fever](#). A compound in the juice is known to help with blood clotting and can restrict the [internal bleeding](#) caused by the disease.

Now, thanks to funding from the Malaysian Ministry of Higher Education, a team of chemical engineers in the University's Food and Pharmaceutical Engineering Group in Malaysia are tackling the challenge of extracting the bioactive compound 'carpaine' for use in a pill for dengue.

Dengue is a mosquito-borne viral infection found in tropical and sub-tropical climates and tends to be concentrated in urban and semi-urban areas. The infection causes flu-like symptoms and can develop into a potentially fatal form of the disease – Dengue Haemorrhagic Fever. The incidence worldwide has grown dramatically in recent decades with severe dengue now a leading cause of hospitalisation and death among children and adults in Asia and Latin America. There is currently no vaccine for it.

Leading the research at UNMC, Associate Professor Dr Ching Lik Hii, said: "Dengue has been a big issue in Malaysia and other countries with similar climates for more than 20 years. People are dying and more people are being infected as the Aedes mosquito population grows and becomes more active. This global problem inspired me to look for something that is a well-known traditional plant based remedy and make it much easier to process and consume".

"We are targeting the active bio-compound carpaine which we know can increase blood platelets and therefore helps reduce internal bleeding. We are also looking at whether the younger leaves or the older leaves contain more carpaine, and also whether the stems of the papaya plant could also be useful."

The carpaine compound is extracted by using alcohol. An acid-base extraction procedure is then used to yield crude carpaine material. Further purification steps produces solid carpaine that is at least 95 percent pure. At the end of the three-year project, the team hopes to have developed the best processing method to achieve the highest yield of carpaine. Other aims are to find out how the carpaine degrades during storage and which parts of the papaya plant are best to use.

The challenge will eventually be to find adequate supply sources of papaya leaf because there are not many large papaya farms in Malaysia and existing farms do not harvest the leaves as their priority is to grow [papaya](#) fruit.

Eventually the researchers aim to work with industry partners in Malaysia and beyond to produce a carpaine medication. They anticipate the product could take at least ten years to bring to market because extensive approvals and clinical trials are needed.

In this [post](#), the University of Nottingham's very own

Provost and CEO at the Malaysia campus, Professor Graham Kendall, tells how he became seriously ill with [dengue](#) after being bitten by a mosquito near his home in Kuala Lumpur.

Provided by University of Nottingham

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