

## Rare plant compounds could hold key to treating resistant hypertension

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Researchers have discovered new natural compounds in a fig plant species native to Malaysia that could lead to improved treatment for resistant hypertension.

Dr. Kuan Hon Lim and his team from the University of Nottingham Malaysia have isolated a new class of natural <u>compounds</u> from a local fig plant species that induce vasodilation in aorta tissue, meaning the compounds have the ability to dilate the aorta blood vessels.

## Nature's answer to resistant hypertension

Dr. Lim explains: "The main aim of our research project is to discover new molecules to treat resistant hypertension and we have found a new class of alkaloids in a specific species of fig that have the potential to do



this. Preliminary data indicated that the new compounds discovered might be eliciting their activity via an important pathway (TRP channel pathway) that may be key to the establishment of a novel approach to treat resistant hypertension in the future."

Hypertension or high blood pressure affects one billion people worldwide and if uncontrolled can lead to cardiovascular disease and death. Resistant hypertension is when blood pressure remains high despite treatment with optimal doses of three different antihypertensive drugs. Current evidence estimates that it affects 14-16% of all patients with hypertension which is equal to 140-160 million people globally. Currently there is no single drug that can effectively treat this condition.

## Finding the Fig and synthesising the compounds

The rare fig species was collected in a rainforest in Peninsular Malaysia. The location of the plant species is crucial as there may be differences in the plant's chemical composition due to geographical variation. Dr. Lim said: "Finding these plant <u>species</u> is a challenge as they are often hidden in dense areas, so when we do find them we map their location carefully using GPS so that we can find them again if we need too. It took over 10kg of the dried fig leaves to produce just enough compounds for a few rounds of biological testing."

To address the apparent sustainability issue, the research team has been developing synthetic methods to make the new compounds in the lab on campus IN Malaysia. Dr. Lim also said: "We have successfully synthesised one of the new compounds very recently in our lab and it showed equal vasodilation activity to the natural compound. Currently, we are also preparing many other molecules that mimic the structures of the bioactive new compounds with subtle differences amongst them with the aim to pinpoint which parts of the molecular structure are essential for bioactivity and eventually discover compounds with superior



vasodilation activity."

## **Painstaking process**

In addition to locating and collecting the <u>plants</u>, extracting and purifying the compounds from the plants is also a painstaking process. The fig leaves were first air dried in the lab for two weeks before being ground down and then extracted with ethanol. Using solvent-solvent partitioning and chromatography techniques, the researchers then separated and purified the plant compounds and examined their chemical structures and properties. When tested on rat aorta tissue, the purified compounds were found to induce significant vasodilation effect.

"Nature has been providing remedies for numerous diseases and ailments for thousands of years, but it is impossible to know everything nature can offer us so making a discovery like this is always exciting. With the help of our biological scientist colleagues we are on the verge of understanding exactly how the new compounds elicit their biological effect, and then hopefully we will have the knowledge and ingredients needed to create an effective drug for resistant <u>hypertension</u>." concludes Dr. Lim.

Provided by University of Nottingham

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