

Seed genes could provide basis for affordable therapeutic drugs

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(Phys.org) -- Queensland scientists are unlocking the benefits of a protein found in seeds of a spiky red fruit that could lead to the development of more affordable medicines made from plants.

The odd-looking [seeds](#) of the gac fruit contain a small protein called MCoTI-2 whose circular shape and resulting stability make it ideal as a basis for drugs.

However, producing such protein-based drugs with traditional synthetic methods is prohibitively expensive on a large scale.

Researchers from The University of Queensland's Institute for [Molecular Bioscience](#) (IMB) and Harvard University (USA), led by IMB's Dr Joshua Mylne and Professor David Craik, discovered the genes that produce MCoTI-2.

“Knowing how these genes, which we named TIPTOP, manufacture MCoTI-2 naturally in gac could allow us to co-opt this process and use it to grow [protein](#)-based drugs in plants,” Dr Mylne said.

“We've already moved the system to seeds of the model plant Arabidopsis, where it worked remarkably well.”

Plant production is cheap and seeds do not require specialised distribution channels, factors that make plant-grown drugs an attractive proposition, particularly for developing nations.

The world's first drug manufactured inside plant cells was approved by the US Food and Drug Administration in May this year, giving hope to researchers who are working towards manufacturing therapeutics in whole [plants](#).

“The discovery is also interesting from a scientist's point of view because it has given insight into some of the evolutionary ‘backflips’ [genes](#) can do to create bioactive peptides like MCoTI-2” Dr Mylne said.

The study was supported by a grant from the National Health and Medical Research Council and has just been published by *Plant Cell*.

More information: Subscribers to the journal can access the full paper at: www.plantcell.org/content/early/recent

Provided by University of Queensland

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