

research highlights

ORAL VACCINES

Papaya salad

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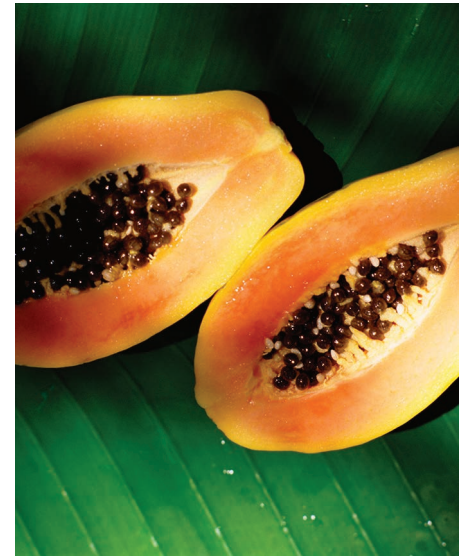
A number of plants, including bananas and tobacco, have been proposed as ways to both produce and deliver vaccines. Now, Edda Scitutto of the Instituto de Investigaciones Biomédicas, Universidad Nacional Autónoma de México, Mexico City, and colleagues have demonstrated the effectiveness of papaya callus tissue for oral vaccination against the widespread disease cysticercosis.

Cysticercosis is caused by the pork tapeworm, *Taenia solium*. It is not only an intestinal parasite of humans, but its larval form (or cysticerci) can infect tissues throughout the body. The most severe and often fatal form involves infection of the nervous system (neurocysticercosis), but infection of muscle, eye and skin is also common. Pigs are the intermediate host of *T. solium*, and therefore a simple-to-administer treatment of pig flocks would greatly reduce its prevalence.

S₃Pvac is an effective vaccine against *T. solium*, containing three peptides derived from the parasites. The Mexican researchers had previously transformed papaya calli using particle bombardment to produce stable lines expressing all three peptides. They had also shown that extracts from these cells could produce both an antigenic response and protection against *T. solium* in mice when administered by injection or orally.

In the most recent study, the researchers have gone a significant step further. Mice were fed callus tissue expressing the S₃Pvac papaya vaccine, either on its own, mixed with corn starch or vegetable oils, or pressed into maize wafers. All of these delivery methods produced high levels of protection against the parasite. In addition, when S₃Pvac-expressing calli were fed to pigs with their food they mounted a substantial resistance response.

These studies demonstrate the potential usefulness of callus tissue for oral immunization, but it will be some time yet before we are faced with a papaya fruit



CREATAS

instead of a hypodermic needle for our winter flu jabs.

Chris Surridge