Could we grow drugs using sunflowers?

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Queensland researchers believe future cancer drugs could be grown in sunflowers and ultimately delivered as a seed 'pill'.

They're a long way from that outcome. But, as they reported to the XVIII International Botanical Congress in Melbourne today, they have already shown that sunflowers make a precursor to cancer drugs as part of their defence against insect attack.

The precursor, a small ring-like protein fragment known as SFTI, has already shown potential as a cancer treatment. Until now, however, it has been considered too expensive to produce by conventional means.

This could all change, using plants as factories, says Dr. Joshua Mylne of the Institute for Molecular Bioscience at the University of Queensland.

"Although SFTI and related proteins have shown great promise as drug templates, the cost to manufacture them has been a significant barrier to their widespread use," Dr. Mylne said.

"This issue could be solved using sunflowers. Seeds are an attractive system for the production of pharmaceuticals, as they are cheap to grow, and their contents remain stable at room temperature and are sterile inside the seed coat.

"There are also established systems in place for seed production, harvest, storage and transportation, meaning they could be the ultimate low-cost drug delivery system."

Through transferring and studying the relevant genes in the model plant Arabidopsis, the thale cress, Dr Mylne demonstrated that SFTI emerges from within a much larger and unrelated protein. It arises as an “extra”, he says. In fact, the fragment is an offcut, chopped off as part of the production process. Interestingly, a similar ring construction system seems to have evolved independently at least three times.

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