

New knowledge could combat fly strike in sheep

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(PhysOrg.com) -- Research at Victoria University could contribute to new treatments for the costly and sometimes fatal condition of fly strike in sheep.

It's common for [sheep](#) to be struck by blowflies in the hot summer months in New Zealand, creating a condition that is debilitating for the affected animals and costs the industry up to \$50 million a year in lost production and treatments.

Although [farmers](#) can buy a range of drenches and sprays to prevent fly strike, there is a growing problem with blowfly [resistance](#) to the treatments available.

Dr Ramavati Pal, who graduated from Victoria with a PhD in Cell and Molecular Bioscience last week, has been studying a family of naturally occurring enzymes called the glutathione transferases or GSTs which most [living organisms](#), including blowflies, use to defend themselves against toxins.

Blowflies that are resistant to the usual preventive treatments may have more of the GST enzymes in their bodies and could be using these protective enzymes to effectively detoxify the poisons being used against them, or to help the fly to resist their [toxic effects](#).

Using novel techniques, Dr Pal discovered that different types and quantities of the enzymes are present at different stages in the blowfly's

[life cycle](#)—egg, larvae, pupae and adult.

"We found out a lot of new things about these enzymes. For example, we have shown that one form of the enzyme previously suggested to be important in some insects' ability to smell is more abundant in the larvae and adult, the mobile phases of the life cycle of the blowfly,

"Another, which we have found to become prominent only in the adult, is thought to be involved in the flight muscle."

Dr Pal says the research, which is to be published in international scientific journals, has contributed important new information to the body of knowledge about GSTs which she describes as a "huge family" of enzymes.

Finding ways of preventing or reversing resistance in insect pests to typical treatments, perhaps by targeting GST enzymes, is Dr Pal's ultimate goal although she says it is a complex area of science.

"The enzymes have a role in protection against toxins but they also have a number of roles in normal development."

Dr Pal completed her undergraduate and Master's degrees at Sardar Patel University in Gujarat, India, and won a scholarship to carry out PhD study at Victoria.

Before coming to New Zealand she worked in health research, investigating the effect of insecticide poisoning on another important [enzyme](#), acetyl cholinesterase, in humans.

Provided by Victoria University

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