

TECHNICAL SUMMARY

ABOUT 13% OF TUTIN COMPOSITES FAIL

Steve Howse and Michael Hutcheson, Analytica Laboratories

Composite testing is a popular and affordable way of confirming that tutin concentration in honey samples meets MPI requirements. We have reviewed results for all tutin composite samples tested at Analytica in 2017, 2018, and 2019. Eighty-seven percent of these samples had low results, meaning that all the individual samples in those composites were below 0.7 mg/kg of tutin. About 13% had composite results that required a re-test of individual samples.

Introduction

Tutin is a toxin produced by the native tutu plant (*Coriaria arborea*), and is unique to New Zealand. Honey containing tutin is known to be a serious health risk to humans, and because of this there are legal requirements for those selling or giving honey to others to be sure that honey does not contain high amounts of tutin. These requirements are found in the Ministry for Primary Industries' Food Standard Tutin In Honey, and the current version of this standard came into force in February 2016 (Ministry for Primary Industries, 2016). It describes a range of things that those working with New Zealand honey need to do to manage the health risk presented by tutin.

Some honey is regarded as having a low risk of containing tutin because of:

- **when it was harvested**—prior to 31 December from hives that were placed after 1 July in that same year; or
- **where it was harvested from**—below latitude 42 degrees south, or from other areas where there is evidence of the tutu plant not being present or tutin not being found in honey.

Other honey needs to be checked through testing by an approved laboratory, and this is what most people choose to do.

Each year Analytica tests a large number of samples for tutin. People sending those samples range from hobbyist beekeepers (wanting to be sure their honey is safe for family and friends to eat) through to large commercial beekeeping companies who have a lot of honey to sell. We have reviewed composite tutin testing results from freshly extracted honey from 2017, 2018, and 2019 so that readers have an idea about how often positive results are found.



Scolytopa australis (passion vine hopper) on a tutu (Coriaria) bush, showing the adult and juvenile ('fluffy bum') stages of scolytopa. Photo: Frank Lindsay.

About 13% of composite samples tested returned a high result for tutin

The most popular way of testing for tutin is to have up to 10 samples combined together for testing as a composite sample.

- If the result of the composite sample is low, then all of the individual samples included in the sample must be low.
- If the composite sample result is above a certain threshold, then it's likely that one or more of the individual samples included in it will be above the Food Standards Australia New Zealand limit of 0.7 mg/kg.

In the case of samples tested by Analytica over the period 2017 to 2019, an average of between five and six individual samples were included in each composite. Of the composite samples tested, about 87% of the results were low enough that no further testing of samples was needed. The rest were either clearly at a level where a re-test of individual samples was

needed (about 12%) or were borderline when testing variability was taken into account (1%).

If you have honey that has a high risk of containing a lot of tutin, it's best to just test it individually from the outset

Composite testing for tutin is a great way of saving money when the composite result is low. However, if the composite result is high, then the individual samples will still need to be tested. If you have a sample you suspect may contain high levels of tutin, it's usually better to test it individually from the start, and avoid the added cost of including it in a composite.

What can be done with extracted honey containing high concentrations of tutin?

The Tutin In Honey Food Standard describes three options for dealing with extracted honey containing high concentrations of tutin:

continued...

EDUCATION

SCHOLARSHIP OFFERS YOUNG BEEKEEPERS A BOOST

Charlotte Lee-Smith, Apiculture New Zealand Communications Coordinator

1. blend with other honey, so that the concentration of tutin in the blended batch is at or below the Maximum Residue Limit of 0.7 mg/kg.
2. feed the honey back to bees, as long as there are no honey supers on the hives when this is taking place. It should be noted that tutin is also likely to be toxic to bees, and there will potentially be risks to the health of the hive if honey with high concentrations of tutin is fed back to them.
3. dispose of the honey in other ways that are approved in writing by the Ministry for Primary Industries.

[Editor's note: transferring honey frames between colonies also poses a risk of spreading AFB. Beekeepers considering feeding honey back to bees would need to be confident of their pre-harvest inspection procedures.]

Does it really matter?

There is no doubt that people have become very sick as a result of eating honey containing tutin (Beasley, Hood, Anderson, Reeve, and Slaughter, 2018). For commercial beekeepers there is no option but to meet the requirements of the Food Standard, because it is illegal to sell honey that hasn't met one of the five options in the Tutin in Honey standard.

However, the cost of testing can feel high to smaller-scale beekeepers who are producing honey for family and friends. The simple fact is that the cost of a test is little more than the cost of a visit to an emergency medical centre (and may be a lot less if submitted alongside other samples from a group or club).

References

Beasley, M., Hood, D., Anderson, P., Reeve, J., & Slaughter, R. J. (2018, April 13). Poisoning due to tutin in honey—a report of an outbreak in New Zealand. *The New Zealand Medical Journal*, 131(1473), 59–71. Retrieved September 6, 2019 from <https://www.nzma.org.nz/journal/read-the-journal/all-issues/2010-2019/2018/vol-131-no-1473-13-april-2018/7544>

Ministry for Primary Industries. (2016). *Food Standard: Tutin In Honey*. Retrieved September 6, 2019, from <https://www.mpi.govt.nz/dmsdocument/11137-food-standard-tutin-in-honey>.

[Editor's note: for more information about tutin, see pages 41-44. For any inquiries about the tutin standard, e-mail animal.products@mpi.govt.nz]

Young people interested in entering the beekeeping industry are invited to apply for the Ron Mossop Youth Scholarship, an annual grant sponsored by Mossop's Honey.

The scholarship aims to encourage young people into the apiculture industry and to undertake training that supports best practice.

The scholarship includes \$2000 to put towards an agreed apiculture training programme (such as the New Zealand Apprenticeship in Apiculture scheme), a one-year membership to Apiculture New Zealand and attendance at the ApiNZ national conference in the year the scholarship is awarded.

The scholarship is named after industry pioneer, Ron Mossop, who started his family beekeeping businesses in the 1940s. His business was established on values of quality and integrity, which remain an integral part of Mossop's Honey today.

Neil Mossop said it was a great honour for the Mossop family to be involved in the scholarship and support young people into the industry. "Mossop's Honey is still very much committed to the high standards in the beekeeping business set by my father. We are thrilled to support a scholarship that is instilling those values in the next generation of beekeepers."

Inaugural recipient Ariel Kururangi describes the scholarship as giving her a great head start in the industry. "I've really enjoyed learning more and getting the opportunities that have come with the scholarship."



The late Noeline Mossop and the late Ron Mossop. Photo supplied by Wendy Mossop.



Ariel Kururangi. Photo supplied.

She encourages young people interested in beekeeping to give it a try. "You never know what opportunities it may lead to. The beekeeping industry opens many doors and has a range of different areas you can specialise in."

Applications for the scholarship close on 31 October 2019.
For more information and how to apply, go to:
<https://apinz.org.nz/scholarship-in-beekeeping/>