

Yes, you can make alcohol from Vegemite, but ...

August 14 2015, by Maggie Hardy



The humble spread gets caught up in the home brew debate. Credit: Flickr/atl trader, CC BY

Vegemite has been in the news of late for all the wrong reasons. It all started when Minister for Indigenous Affairs Nigel Scullion said he'd heard the yeast extract was being used in dry communities to [brew alcohol](#).

The question of [whether it's even possible](#) to brew [alcohol](#) from the black spread has since been raised.

There is a precedent for implicating Vegemite in alcohol production in marginalised communities. In [2007](#), the breakfast spread came under fire in Victorian prisons as part of the sly-grog supply chain. In [2013](#) both Vegemite and Ribena were linked to homebrew systems in Indigenous communities with alcohol management plans in place.

In the United Kingdom in [2009](#), when assaults by prisoners increased reportedly due to hooch, access to fruit (including fresh apples and pears, tinned fruit, fruit juices and syrups) was prohibited or restricted.

Is it possible to make alcohol from Vegemite?

The short answer is "yes," sort of. But then again, you can make alcohol from just about any food by adding the right type of [yeast](#) at the right time.

Fermentation is the process of converting sugars to acids, gases or alcohol using a variety of microbial organisms, including yeast and bacteria. Many nonalcoholic foods use fermentation in the production process, including bread, [chocolate](#) and pickled foods (for example, sauerkraut or kimchi).

Naturally occurring alcohol predates human history, and has been discovered by animals on [a number of occasions](#). The earliest fermented alcoholic beverage has been [reported](#) from what is now China, and dated

around 7000BC.

Modern brewing techniques combine knowledge from the natural world and early human history with recent technological advances in food safety and quality.

Baker's yeast, *Saccharomyces cerevisiae*, is a fungus that lives naturally on every continent. This single celled organism may have already smuggled itself to Antarctica and into space, stowing away on its usual home: the surface of fruit.



An extract from The Compendium of Alcohol Ingredients and Processes shows some of the different ways of creating alcoholic drinks. Credit: The Vine Daily

The fungus is so ubiquitous and hardy, it can be found almost anywhere.

In fact, the next time you're in Oregon, you can even have a craft beer fermented with [yeast from the master brewer's beard](#). Or, you can try a beer that's been brewed with yeast that was [sent into space on a rocket](#).

Scientists also use yeast in their research: for example, Ben uses yeast as a model system to mimic what happens in humans, to find out why many proteins have [complex sugar structures attached to their surface](#). Maggie uses yeast as part of a [recombinant expression system](#) to produce [insecticidal peptides](#) found in spider venoms.

How is Vegemite made?

It's ironic that one of the key byproducts of beer fermentation is yeast. Much of this yeast goes to animal feed or other food products, but some cultures have developed the habit of further processing this thick yeasty paste.

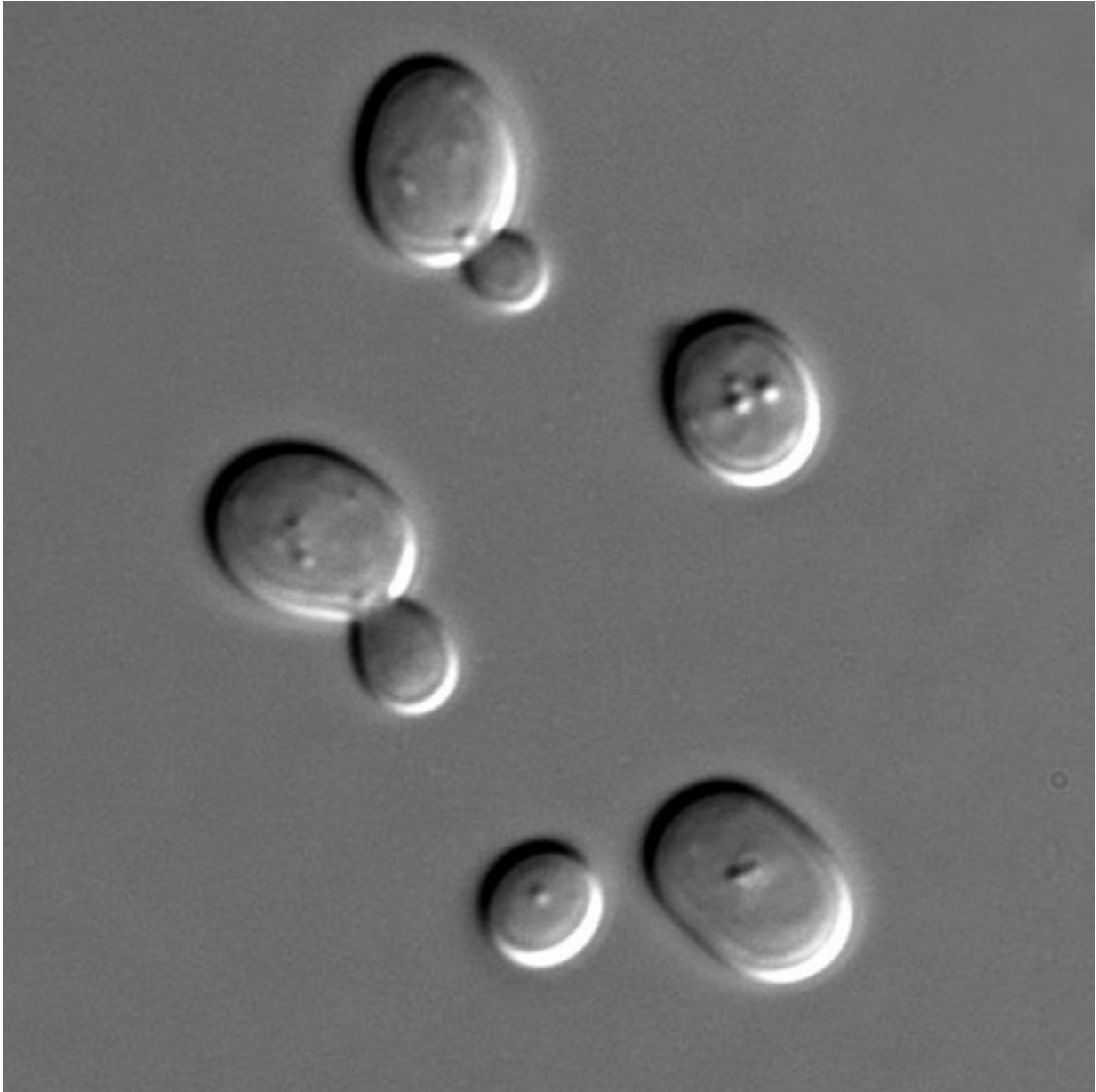
Salt is added and the mixture is heated, which causes the [yeast cells](#) to burst open. Any remaining cellular material is removed manually by filtration to produce the deliciously smooth local delicacy we call Vegemite.

The salt and heat kill pretty much everything – almost certainly including yeast – so that makes it no good as a source of yeast for brewing. The yeast would have to be added back in just as you would with any food to make a fermented product (like alcohol, or bread). The same is true for any food: all you need is a sugar source and the right microorganism to ferment food.

But we are scientists who use yeast in our research, so why take it for granted that there's no live yeast in Vegemite when we can run an

experiment and see if it's true?

So we bought fresh, unopened jars of Vegemite, and tried to grow anything at all from the contents. Nothing grew. You can see for yourself in the photos below.



Saccharomyces cerevisiae, baker's yeast. Credit: Masur/Wikimedia Commons

Should Vegemite be banned in Indigenous communities?

The [World Health Organization](#) reported a quarter of alcohol consumed worldwide in 2010 was unrecorded (homebrew).

The [Global Status Report on Alcohol and Health](#) shows Australia's unrecorded [alcohol consumption](#) increased from an average of 0.1 litres per person in 2003–2005 to 1.8 litres per person from 2008–2010. The amount of recorded alcohol remained the same during both periods.

The first alcohol management plan was implemented by a Queensland Indigenous community in [2002](#), in Aurukun. Alcohol management plans and subsequent legislation requiring mandatory treatment for public drunkenness have been [controversial](#).

Even though there is no active yeast in Vegemite, it can still be used as a substrate for other microorganisms that could ferment the sugars and, ultimately, produce alcohol. That's true of any sugar-containing food, including fruit and [fruit juices](#).

Science tells us alcohol can be made from just about any [food](#) that contains sugar, in the presence of the right naturally occurring microorganisms. That doesn't mean fresh fruits, or everyone's favourite breakfast spread, should be prohibited.



We could not grow yeast from Vegemite (on the left); plenty of yeast grew on the control plate (visible as white streaks on the right plate), which didn't contain Vegemite. Credit: B. Schulz

Limiting access to fresh fruits, as the UK has done, is counter intuitive from a public health perspective. This would be especially damaging for Indigenous Australians, who have diabetes at [three times the rate](#) of non-Indigenous Australians.

Evidence-based, community-led, practical solutions should prevail to address complex challenges. Simply blaming a breakfast spread is not the solution.

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