

# Camel milk reduces cell inflammation associated with type 2 diabetes

May 23 2019, by Keith Morris

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Credit: AI-generated image ([disclaimer](#))

The current trend for certain foods and dietary components to be called "superfoods" is frequently associated with exotic and expensive products. But there are [no set criteria](#) to determine a food's "superness"—and claims rarely have any scientific basis. It is usually simply a (often very successful) marketing ploy.

Take [camel](#) milk for example. Its superfood status has been proposed regardless of the fact that [much of the evidence](#) of its [health benefits are based](#) on [animal studies](#), or in populations where lifestyle and genetic factors [could equally play a role](#). But while it may not be a superfood, [our new research](#) has found that camel milk products could have benefits for people with type 2 [diabetes](#).

Over the years some evidence [has been published](#) suggesting that consumption of camel milk [can prevent](#) diabetes. However, the actual basis of these benefits is poorly understood and few studies have investigated what component or components present in camel milk convey any of its supposed anti-diabetic benefits.

Studies that increase our understanding of the benefits or otherwise of [dietary components](#) are very challenging, but particularly for a food as complex as milk. Milk is made up of lipids and proteins, including immunoglobulins (antibodies produced by [plasma cells](#)) and vesicles (liquid produced by cells which is enclosed in a [lipid](#) membrane), as well as vitamins and minerals. Given this complexity we chose to investigate only the lipids (fats) in camel milk, and their effect on an aspect of diabetes known as [inflammation](#).

## **Lipids and diabetes**

Diabetes is, arguably, one of the greatest current global health problems. It is known that inflammation in abdominal fat around the waist is [a dangerous feature](#) of the more common type 2 diabetes. Normally inflammation is a way of dealing with infections such as viruses. But obese and diabetic individuals have continuous chronic inflammation that does not involve any infections. This inflammation can lead to many of diabetes' complications including heart disease and strokes.

A cell called the macrophage, present in [abdominal fat](#), is a major player

in the development of this inflammation. So we decided to study whether the camel milk lipids could prevent macrophages similar to those found in fat from becoming inflamed when in the presence of the proteins found in diabetics.

Camel milk, butter and yogurt are highly nutritious foods with a high content of vitamin C, iron, calcium, insulin and protein. The presence of fat in any milk is often the basis for avoiding dairy products, but milk fat is an important component given its high nutritional value. Camel milk does have a lower fat content compared to that of a cow, however, and its [fatty acids](#) are mostly polyunsaturated fatty acids. These are generally regarded as healthy fatty acids, but the saturated fat or lipid content of camel milk can be as high as 65%.

We incubated macrophages with saturated and unsaturated lipids taken from camel milk, both individually and in a mixture of the two—this is, after all, how we would consume them and how they are generally stored in the body. Our experiments showed that the fatty acids from camel milk reduce the inflammation produced by these macrophages, but the effect was more pronounced in the mixture of the lipids, than when the camel milk was with only unsaturated fatty acids.

A particularly interesting finding was that a complex of proteins known as the inflammasome (a central driver of inflammation) was reduced by these lipids. If these effects could be repeated in studies with humans then this would show that the milk may prevent the inflammation associated with diabetes. These results may also explain some of the benefits reported for camel milk consumption in preventing diabetes.

Dietary studies are littered with [experimental data](#) such as ours, suggesting that different foods have a plethora of beneficial or harmful effects that are less convincingly found in actual people. We can't say for certain whether camel [milk](#) "cures" diabetes, or if it would reduce

inflammation if a person with type 2 diabetes regularly consumed it. Our new data suggests that it *may* play a role in reducing the inflammation that is a major part of type 2 diabetes. Far more experimental work and at some point human trials are required to demonstrate if these results have relevance to people.

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