

# SCIENCE, TRANSLATED

• MAKE SCIENTIFIC DISCOVERIES ACCESSIBLE FOR THE WORLD •

• **Second Issue** •

ALL ABOUT  
CHEMISTRY



Science, Translated

• MARCH 2021 •

# Science, Translated

*Make scientific discoveries accessible for the world*

## *In This Issue*

**Introducing:  
Spotlight for Science**

**March features:**

**Coffee and Lactose  
intolerance**

**Sleep Deprivation and  
Gut Health:  
Accumulation of  
Reactive Oxygen  
Species in the Gut can  
be Lethal**

**The culinary, cultural,  
and clinical  
significance of spices**

*Does caffeine  
really affect sleep?*

Here's what science says...

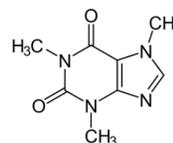


Research published from the  
Journal of Clinical Sleep Medicine  
demonstrates that...

400 mg of caffeine can disrupt your sleep, even if  
consumed 6 hours before bed!

Caffeine's **mean half-life** is **5 hours** (may vary among  
individuals)

This means that if you consume 400 mg of caffeine  
at 4pm, you will likely still have 200 mg of caffeine  
in your body at 9pm.





# How does lactose intolerance work?

Here's what Science says...

## What happens if you don't have enough lactase?

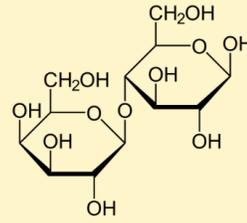


The undigested lactose moves to your colon (large intestine), and from there, bacteria breaks it down.

This is why some people experience symptoms like bloating and gas.



## Lactose is a sugar found in milk and dairy products



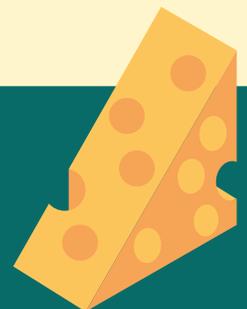
This sugar is broken down by an enzyme called **lactase**.

**Lactase** allows your body to properly digest **lactose**. People with intolerance have very little lactase in their body (their small intestine doesn't make enough)

## Lactose Intolerance and dairy allergy are NOT the same



Lactose intolerance is related to the **digestive system**  
Dairy allergy is related to the **immune system**





## **Sleep Deprivation and Gut Health: Accumulation of Reactive Oxygen Species in the Gut can be Lethal**

By Mahnoor Faheem

Getting an adequate amount of sleep is important for our general health, cognition, and immunity. However, sleep is also important for our gut health, and lack of sleep can have detrimental consequences. A study done by researchers at Harvard Medical School in 2020 found that severe sleep deprivation can lead to the accumulation of reactive oxygen species in flies and mice's gut. These molecules are unstable and can cause cell damage and other gut issues, and ultimately, overall health. Flies and mice are common model organisms for research, so this study can further help understand the effects of sleep deprivation on humans and our health.



## **The culinary, cultural, and clinical significance of spices**

By Diana Eve Amiscaray

Spices are often overlooked as simple enhancers that add flavor to food. However, spices play a greater role in human health and society than typically thought. Historically, they were used as preservatives for food and remedies for illnesses. Thus, spices were considered essential commodities, and consumers were willing to travel across continents to participate in the Spice Trade. Due to the advancement of medicine, spices are typically disregarded when discussing health today. However, spices' significance should not be underestimated, as several spices are able to induce powerful psychoactive effects. Additionally, studies suggest that some spices hold prebiotic potential and distinct pharmacological properties. This article discusses the unique chemical properties of the following spices: Nutmeg, Clove, Ginger, Black Pepper, Cinnamon, Vanilla, and Fennel.



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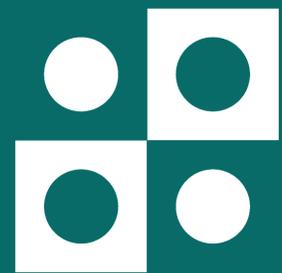
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