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CRY?

Why Do Onions Make Us Cry?

Lindsay Mitchell

Beal College

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The stimulation of the lacrimal gland to form tears after cutting into an onion is the end result of a chemical process that occurs due to unstable substances found within an onion. Onions consist of amino acid sulfoxides. The cells of the amino acid sulfoxides rupture when an onion is cut. This substance then reacts with an enzyme called lachrymatory-factor synthase (Library of Congress, 2020). This reaction converts the amino acids to a chemical called syn-propanethial-S-Oxide (AumSum, 2017). This chemical is volatile and quickly evaporates at room temperature. When this evaporation occurs, the syn-propanethial-S-Oxide forms into a gas which eventually makes its way up to your eyes. The eyes naturally produce a substance which provides constant lubrication to the surface of the eye. The syn-propanethial-S-Oxide then reacts with this lubricating substance and forms a mild acid (AumSum, 2017). This acid will cause a mild burning sensation. This acid will prompt a signal to the lacrimal gland to produce a disinfecting liquid in order to wash away the irritating acid. When there is a buildup of this disinfecting liquid, that is when tears occur.

There are a few ways to reduce or prevent the tears and the irritation when cutting onions. You can try chilling the onion in the refrigerator first. This will cause the syn-propanethial-S-Oxide to evaporate at a slower rate (Callaway, 2008). You can also try using a fan or a vent hood which can help pull the gas that is formed by the chemical reaction away from your eyes. The most reliable method would be to wear some form of goggles which would prevent the gas from making contact with your eyes.

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References

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