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Yeast RNA Extracts Create Extreme Haze in Lager Beer, Danish Study Finds

Discovery offers brewers a novel method to control cloudiness, expanding options for popular hazy beer styles

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Researchers in Denmark have found a new way to make lager beer hazy by adding yeast extracts, according to a study published in the Journal of Agricultural and Food Chemistry. The team, led by Esben Due Yding and colleagues, experimented with two

brands of clear European lager. They added RNA-rich extracts from brewer’s yeast cells to the beers, which resulted in both beverages becoming extremely cloudy.

The haze in beer is a key visual feature for certain styles, such as wheat beers and New England IPAs. Traditionally, this cloudiness comes from small particles made up of barley proteins and hop polyphenols. The new research shows that yeast RNA can also create haze, offering brewers another method to achieve the popular hazy look.

The scientists found that the haze formed when RNA from the yeast extract interacted with a specific protein in the beer, known as protein Z. The particles that caused the cloudiness measured about one micrometer in diameter. The amount of haze increased with higher concentrations of RNA, but the same amount of RNA produced different haze levels in the two brands of lager tested.

To understand the process, the researchers used FT-IR spectroscopy and SDS-PAGE analysis. These tests confirmed that the haze was made up of both RNA and protein Z. When the haze was treated with ribonuclease, an enzyme that breaks down RNA, the cloudiness disappeared. This showed that intact RNA chains are necessary for the haze to form.

The team also studied how other factors affected haze formation. They found that increasing the ionic strength of the beer, by adding salt, reduced the haze. The haze also decreased as the pH of the beer approached the isoelectric point of protein Z. These results suggest that the haze is created by electrostatic interactions between protein Z and RNA.

The findings could be useful for brewers who want to control the appearance of their beers. Hazy beers have become more popular in recent years, especially among craft brewers and consumers looking for new styles. The use of yeast RNA extracts could give brewers more flexibility in creating beers with different levels of cloudiness.

The research was published on July 22, 2025, and is available through the American Chemical Society. The study provides a new perspective on beer haze formation and could influence brewing practices in the future.