Glycolaldehyde—the simplest sugar—discovered around newly developing star
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A false-color infrared image of the star forming region in the constellation of Ophiuchus. Recent observations have detected simple sugar, glycolaldehyde, around one of the faint, young reddish protostars in the region. Credit: NASA-WISE

A new paper in The Astrophysical Journal Letters reports discovering glycolaldehyde in the material around a newly developing star of approximately solar mass. CfA astronomer Tyler Bourke and five colleagues used the new Atacama Large Millimeter Array (ALMA) facility in Chile to observe the protostar IRAS16293-2422, located about 400 light-years away. They find thirteen different lines characteristic of this molecule, and their analysis finds that the gas is warm (about 200-300 kelvin) and probably part of a large system of material flowing in towards the star as it grows and develops a system of planets. Although the exact mechanism(s) that produce the glycolaldehyde are uncertain, the new results help confirm that molecules associated with life exist in normal environments around young, solar-mass stars.

The team notes that the new facility will enable astronomers to study this sugar in other places and begin to tell a more complete story of how the rich chemistry found on Earth developed.

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