INVESTIGATING THE INTERSTELLAR CHEMISTRY LEADING TO SIMPLE SUGARS

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Ribose, the five-carbon sugar that composes part of the helix backbone of RNA and DNA, is thought to be formed from the formose reaction. The most difficult step in this sequence is the 1+1 addition of H_2CO, leading to glycolaldehyde. Yet, given the presence of formaldehyde and glycolaldehyde in interstellar space, this reaction must occur. We are investigating reaction mechanisms by radio observations of glycolaldehyde, H_2CO, H_3CO^+, and other related species in interstellar gas. We are also looking at the behavior of formaldehyde in the gas phase under acidic conditions using PTR-MS and MS-MS techniques. The results of these ongoing investigations will be presented.