

FIRST MONOSACCHARIDE-WATER COMPLEX CAUGHT BY MICROWAVE SPECTROSCOPY

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Carbohydrates are the main source of energy and make up the main backbone of DNA and RNA, which make them, among many biological systems, of particular interest. Furthermore, they take part in the recognition process, where has been demonstrated that water is actively involved. The role that water molecules play in glycobiology is crucial and is not yet well understood, in part, for the lack of experimental information about how water comes into play in the monosaccharide conformations. Here we present xylopyranose-water complex, first microhydrated monosaccharide studied in gas phase using the combination of laser ablation and broadband microwave spectroscopy. The revealed way in which water binds to the xylopyranose molecule, among the many possibilities due to the high capacity to form hydrogen bonds, can be considered the first step in understanding the mutarotation processes that monosaccharides undergo in biological environments.