

Water Signal Control

Researchers at the University of Western Sydney (Dr Gang Zheng, Prof William S. Price and Dr Allan M. Torres) have developed a new method of water signal control/suppression to prevent the problematically strong water signal in solution-state NMR, with no or minimal loss of features of interest.

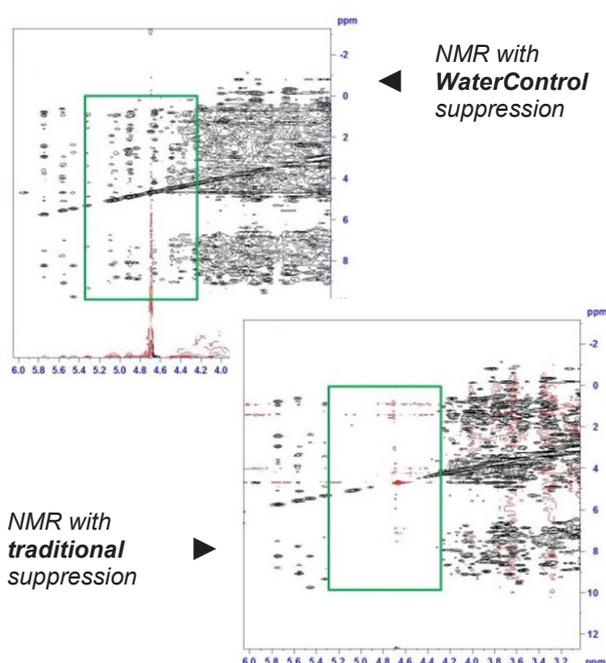
The newly developed **WaterControl** technique provides highly selective and quantifiable water signal control/suppression suitable for protein/DNA/RNA structure determination, metabolomics, magnetic resonance spectroscopy (MRS) and chemical shift imaging (CSI).

The determination of protein/DNA/RNA structures is one of the major application areas of NMR. An intrinsic problem associated with this application is that these biomolecules are dissolved in water which generates an intense water signal due to its significantly higher concentration than the biomolecules of interest.



To observe the biomolecular NMR signal without water signal control/suppression is just like trying to take a picture against the sun - the strong sunlight will seriously hinder the observation of the features of interest and cause many artefacts. The traditional water signal suppression will not only suppress the water signal but also some biomolecular signals which are crucial for structural determination. The effect is comparable to the loss of facial features when blocking the sunlight using a homemade filter.

The newly developed **WaterControl** technique allows the control/suppression of the water signal **with no or minimal loss of features of interest**.



As the figures demonstrate, the **WaterControl** technique is able to conserve the important lysozyme ^1H NMR signals contiguous-to-water in 2D NOESY NMR.

Key Benefits

- More efficient and accurate determination of protein/DNA/RNA structures
- More efficient metabolomics analysis
- More efficient Magnetic Resonance Spectroscopy and Chemical Shift Imaging

Status: Available for licensing

School: School of Science & Health

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