Cell cycle of *Chlamydomonas reinhardtii* grown in D_2O

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The difference between hydrogen and its stable isotope deuterium is the biggest among stable isotopes of all other elements. Such a difference results in numerous consequences for chemical and biological processes, where hydrogen or deuterium is involved. Generally, deuterium represents a challenging stress for organisms across all kingdoms of life, with the highest tolerance to deuterium found in microorganisms.

In our current study, we observed the effect of deuterium, administered as heavy water (D_2O), on unicellular microalga *Chlamydomonas reinhardtii* strain 21gr. In highly deuterated growth media, *C. reinhardtii* exhibits strong stress response affecting its morphology, accumulation of energy-storing molecules, reactive oxygen species production/accumulation, and maximum quantum efficiency of PSII. Among all other effects caused by deuterium, there is a noticeable change in growth and cell cycle progression; the cell cycle progression being slowed or stopped altogether in highly deuterated cultures. We compared and discriminated the effects of deuterium presence on cell growth and cell cycle progression in synchronized cultures of *C. reinhardtii* deuterated to different extent.