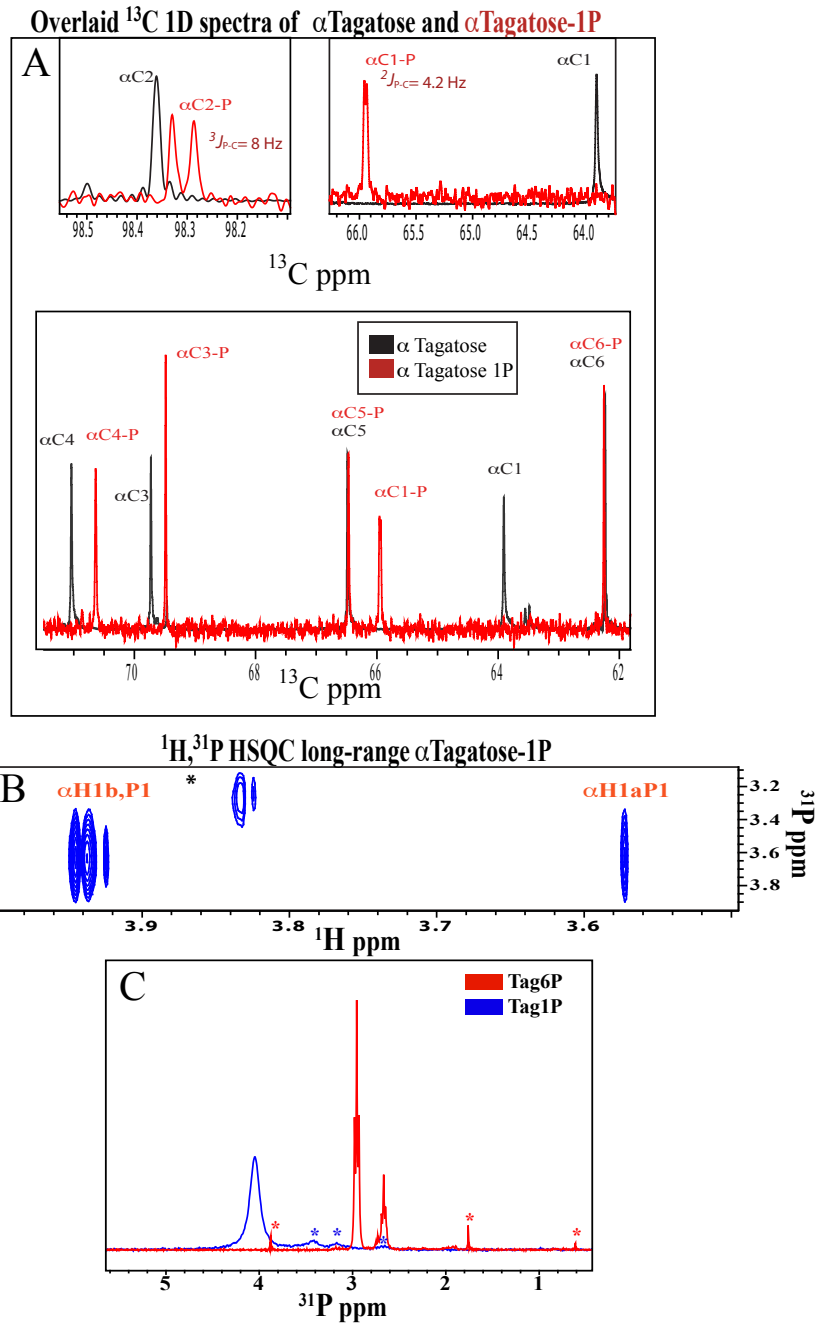
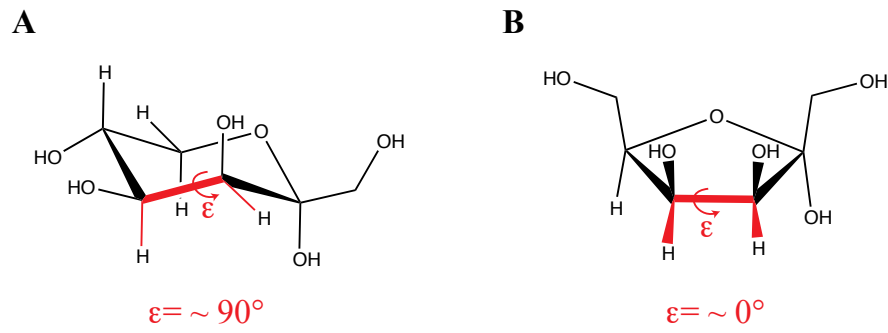


**Figure S1**



**Fig. S1.** A) Overlaid  $^{13}\text{C}$  1D spectra of tagatose (black) and Tag-1P (red). B) A region of a long-range  $^1\text{H}$ ,  $^{31}\text{P}$  HSQC spectra of Tag-1P, showing correlations between  $^{31}\text{P}$  and  $^1\text{H}$  at C1. C) Overlaid  $^{31}\text{P}$  1D spectra for Tag-6P (red) and Tag-1P (blue).

**Figure S2**



**Fig. S2.** Tagatose chemical structures in the  $\alpha$  pyranose (A) and  $\alpha$  furanose (B) forms: the angle ( $\epsilon$ ) between H3,H4 is indicated in red.

**Fig. S1.** A) Overlaid  $^{13}\text{C}$  1D spectra of tagatose (black) and Tag-1P (red). B) A region of a long-range  $^1\text{H}$ ,  $^{31}\text{P}$  HSQC spectra of Tag-1P, showing correlations between  $^{31}\text{P}$  and  $^1\text{H}$  at C1. C) Overlaid  $^{31}\text{P}$  1D spectra for Tag-6P (red) and Tag-1P (blue).

**Fig. S2.** Tagatose chemical structures in the  $\alpha$  pyranose (A) and  $\alpha$  furanose (B) forms: the angle ( $\epsilon$ ) between H3,H4 is indicated in red.