

TABLE 5.7 TEMPERATURE DEPENDENCES OF RATES OF TRIMOLECULAR ION-MOLECULE REACTIONS

Reaction	Experimental temperature dependence	Theoretical temperature dependence ^a		Reference to experimental work
		Linear complex	Nonlinear complex	
$\text{He}^+ + \text{He} + \text{He} \rightarrow \text{He}_2^+ + \text{He}$	T^{-1}	T^{-1}	$T^{-0.5}$	<i>b</i>
$\text{N}^+ + \text{N}_2 + \text{He} \rightarrow \text{N}_3^+ + \text{He}$	$T^{-1.7}$	T^{-2}	$T^{-1.5}$	<i>c</i>
$\text{N}_2^+ + \text{N}_2 + \text{He} \rightarrow \text{N}_4^+ + \text{He}$	$T^{-1.6}$	T^{-3}	$T^{-2.5}$	<i>c</i>
$\text{N}^+ + \text{N}_2 + \text{N}_2 \rightarrow \text{N}_3^+ + \text{N}_2$	$T^{-2.5}$	T^{-3}	$T^{-2.5}$	<i>d</i>
$\text{O}_2^+ + \text{O}_2 + \text{O}_2 \rightarrow \text{O}_4^+ + \text{O}_2$	T^{-3}	T^{-4}	$T^{-3.5}$	<i>e</i>
$\text{N}_2^+ + \text{N}_2 + \text{N}_2 \rightarrow \text{N}_4^+ + \text{N}_2$	$T^{-4.4}$	T^{-4}	$T^{-3.5}$	<i>d</i>
$\text{H}_3^+ + \text{H}_2 + \text{H}_2 \rightarrow \text{H}_5^+ + \text{H}_2$	$T^{-4.6}$	$T^{-4.5}$	T^{-4}	<i>f</i>
$\text{H}_3\text{O}^+ + \text{H}_2\text{O} + \text{CH}_4 \rightarrow \text{H}_5\text{O}_2^+ + \text{CH}_4$	$T^{-4.2}$	$T^{-5.5}$	T^{-5}	<i>g</i>

Enzyme Kinetics of Invertase

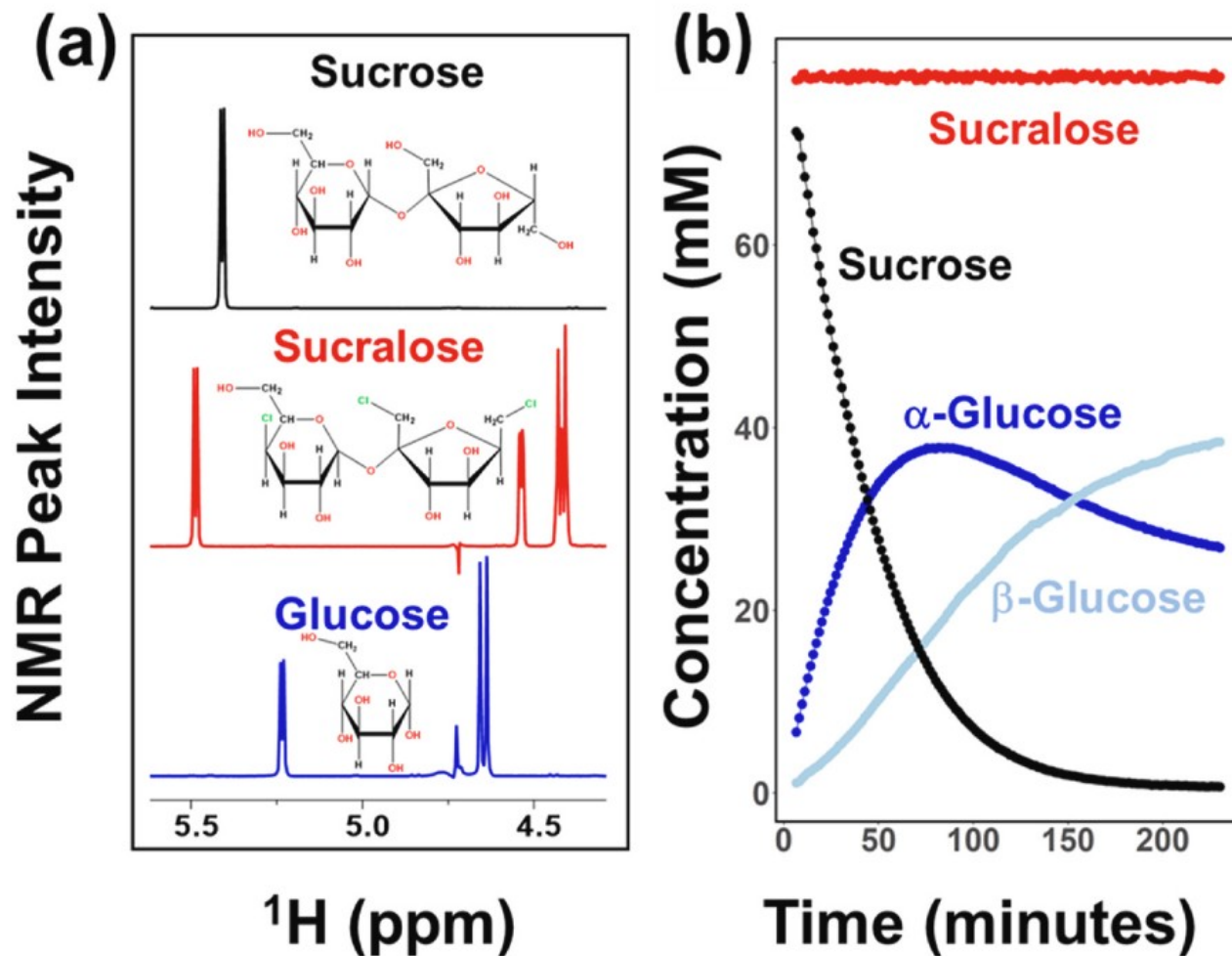


Fig. 3. Progress curve analysis of invertase enzyme kinetics and the role of sucralose. (a) NMR spectral regions of the sucrose (substrate), inhibitor (sucralose), and glucose (one of the products). (b) Real-time qNMR results in substrate depletion ($[S]$) and product formation ($[P]$). The concentration of sucrose (substrate, black circles) and glucose (α and β monomers in blue and light blue symbols, respectively) is shown as a function of time due to the hydrolysis process of the enzyme invertase. Anomerization of α to the β form of glucose is also observed (red symbols). The inhibitor (sucralose) concentration remains constant (red symbols) throughout the experiment. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

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