Osazone Formation

Phenylhydrazine (C$_6$H$_5$NHNH$_2$) reacts with carbons #1 and #2 of reducing sugars to form derivatives called osazones. The formation of these distinctive crystalline derivatives is useful for comparing the structures of sugars. Glucose and fructose react as shown below:

Identical osazones are obtained from D-glucose and D-fructose. This demonstrates that carbons #3 through #6 of D-glucose and D-fructose molecules are identical. The same osazone is also obtained from D-mannose. This indicates that carbons #3 through #6 of the D-mannose molecule are the same as those of D-glucose and D-fructose molecules. In fact, D-mannose differs from D-glucose only in the configuration of the –H and –OH groups on carbon #2.