If an organic compound contains more than one different functional groups or more than one like functional groups that are not equivalent (see equivalent ligands), and, if a reagent reacts exclusively or predominately with one of them, the reaction is said to be chemoselective. For example, both ketones and carboxylic acids can be reduced to alcohols.

eg:

\[
\text{O} \quad \text{reduction} \quad \text{OH} \\
\text{O} \quad \text{reduction} \quad \text{OH}
\]

1 contains a keto group and a carboxylic acid group. When 1 is treated with a reducing agent, three reactions are possible.

When 1 is treated with the reducing agent sodium borohydride (see hydride reagent), the only organic product observed is 2.

\[
\text{1} \quad \text{NaBH}_4 \quad \text{solvent: EtOH} \quad \text{2}
\]

Evidently, sodium borohydride reacts with only one of the two functional groups in 1. Thus, the reaction of 1 with sodium borohydride is chemoselective.

see also regioselective, stereoselective

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Contributors

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