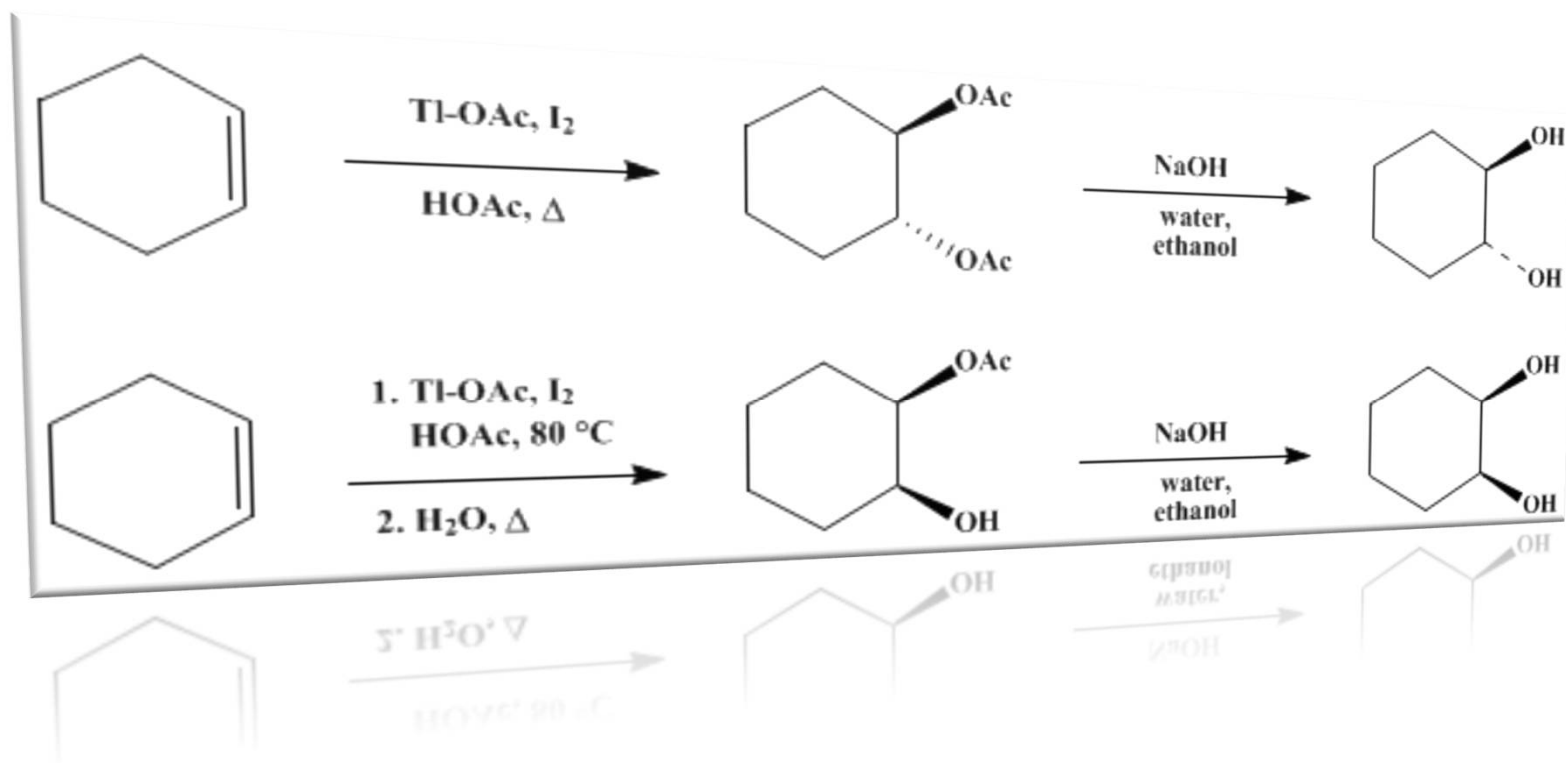
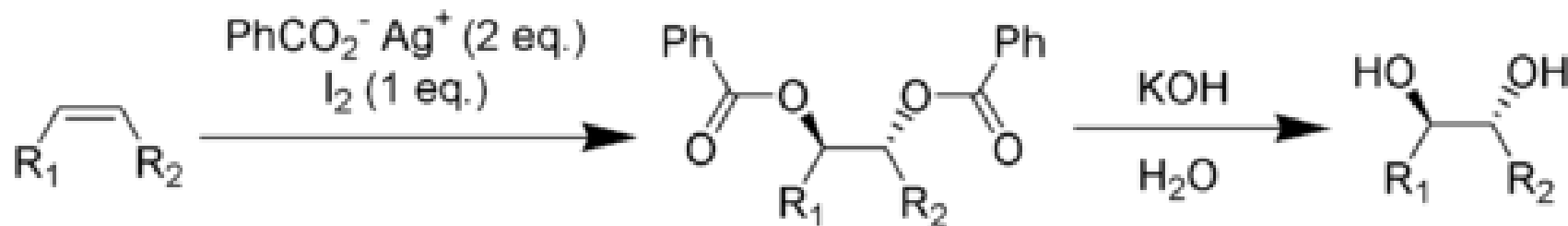


Prevost and Woodward Reagent



Prevost Reagent

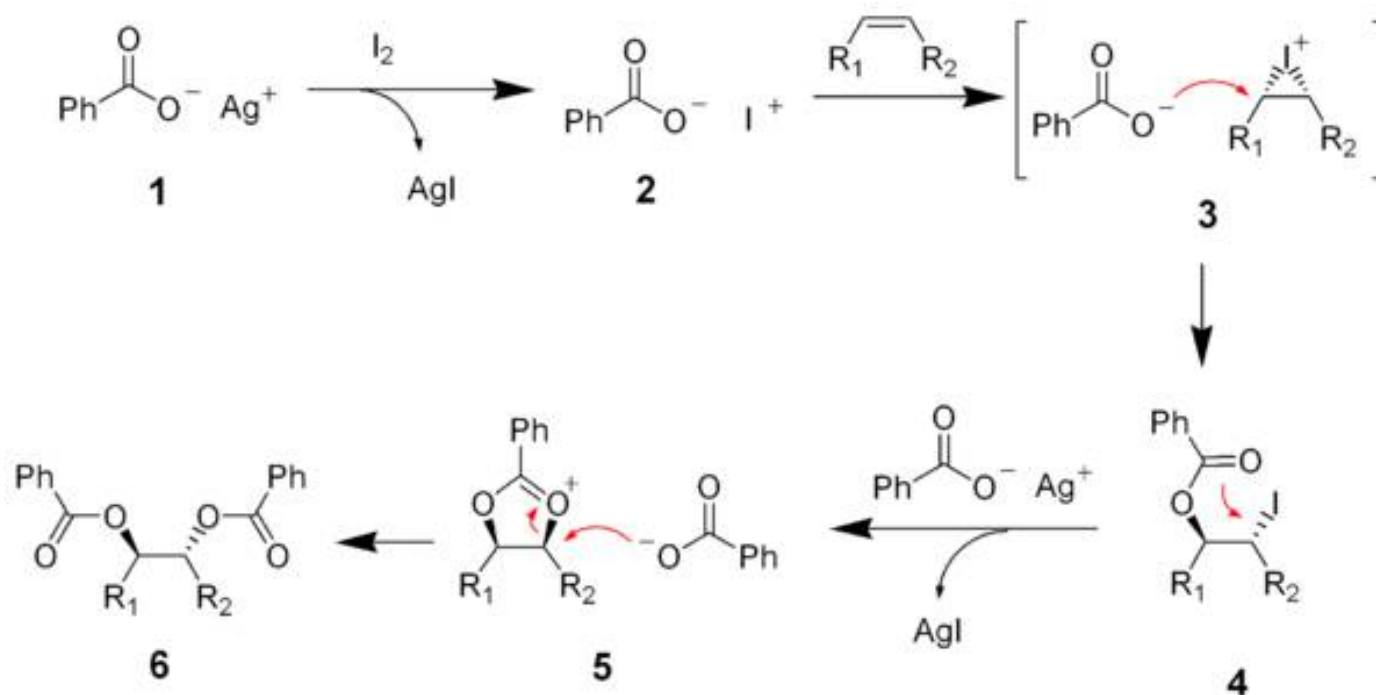
- Prevost reagent is a solution of iodine in carbon tetra chloride together with an equivalent amount of dry silver acetate or dry silver benzoate
- Under anhydrous conditions this reagent converts the alkene into the diacetyl or dibenzoyl derivatives of the trans glycol, which on hydrolysis gives trans-diol
- This reaction is known as PREVOST REACTION.
- The olefin is reacted with iodine in the presence of silver acetate or silver benzoate

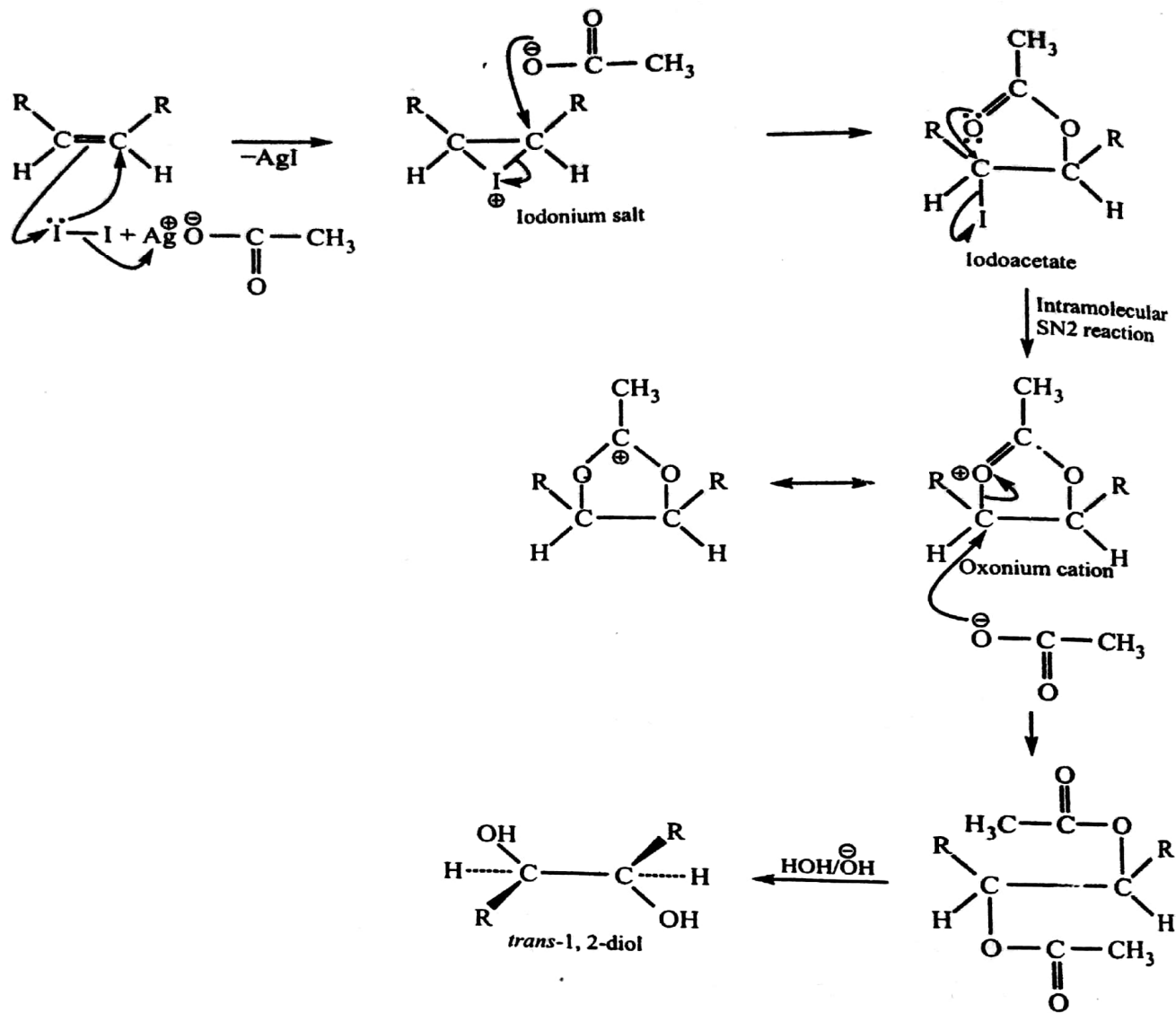


Mechanism of the Prevost Reaction

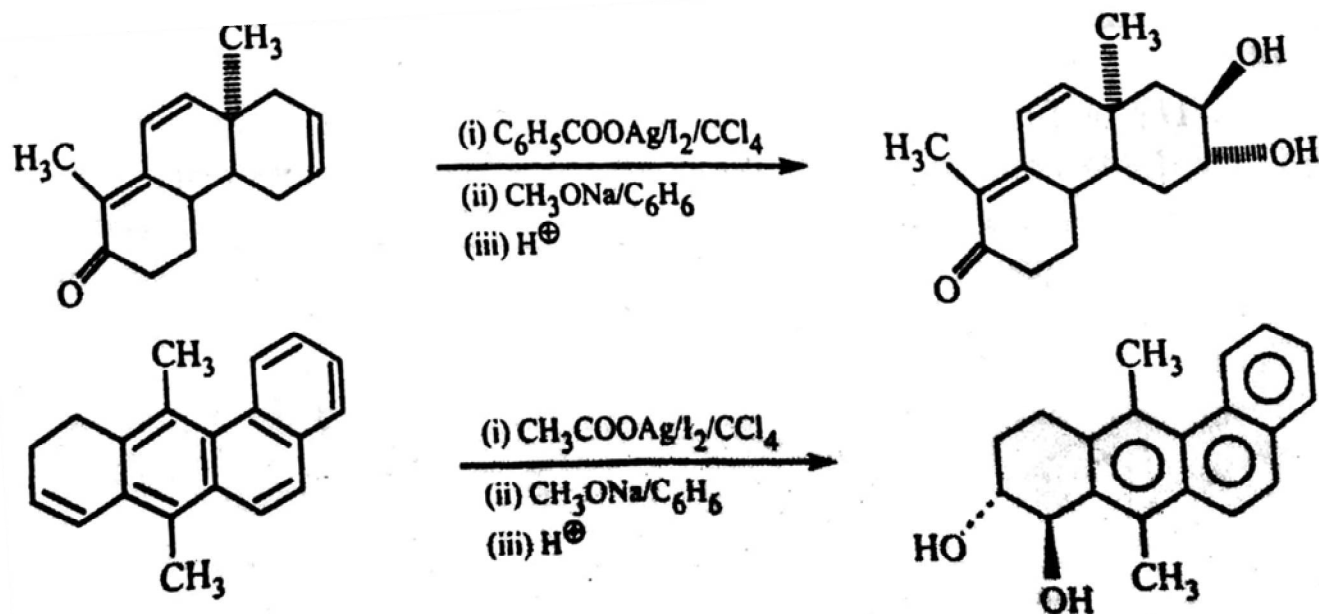
- The initial addition of iodine leads to a cyclic iodonium ion, which is opened through nucleophilic substitution by benzoate/acetate anion in the S_N2 type reaction giving a trans-iodoacetate
- A neighbouring-group participation mechanism prevents the immediate nucleophilic substitution of iodine by a second equivalent of benzoate that would lead to a *syn*-substituted product. Instead, a **cyclic benzoxonium ion** intermediate is formed:

The reaction between silver benzoate (1) and iodine is very fast and produces a very reactive iodonium benzoate intermediate (2). The reaction of the iodonium salt (2) with an [alkene](#) gives another short-lived iodonium salt (3). Nucleophilic substitution ([S_N2](#)) by the benzoate salt gives the ester (4). Another silver ion causes the [neighboring group substitution](#) of the benzoate ester to give the [oxonium salt](#) (5). A second [S_N2 substitution](#) by the benzoate anion gives the desired diester



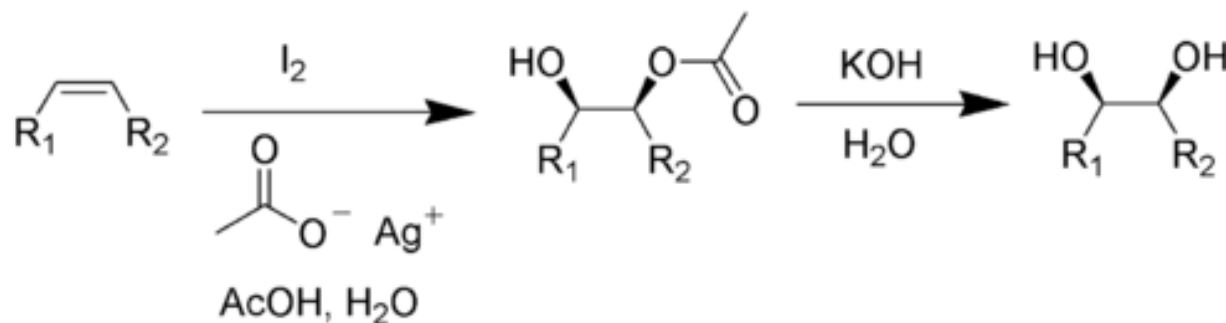


- The value of this reagent is due to mildness of the reaction conditions
 - It hardly affects other sensitive groups in the molecule

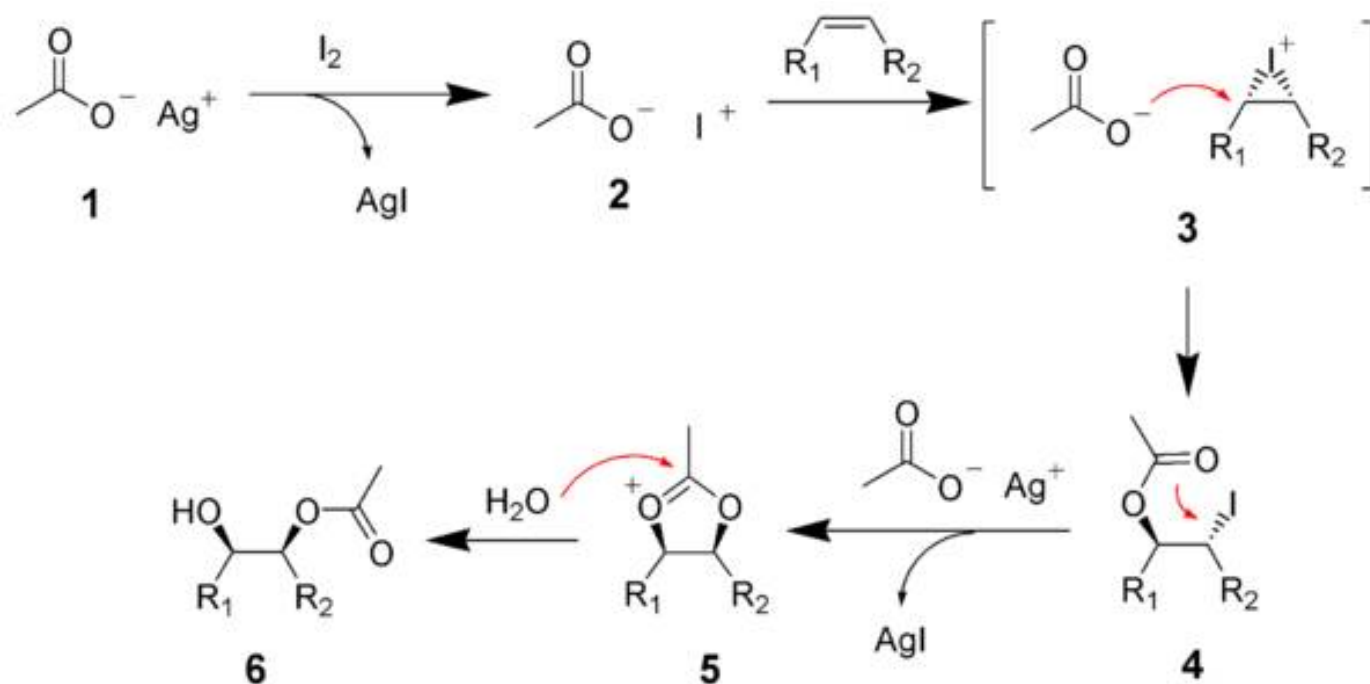


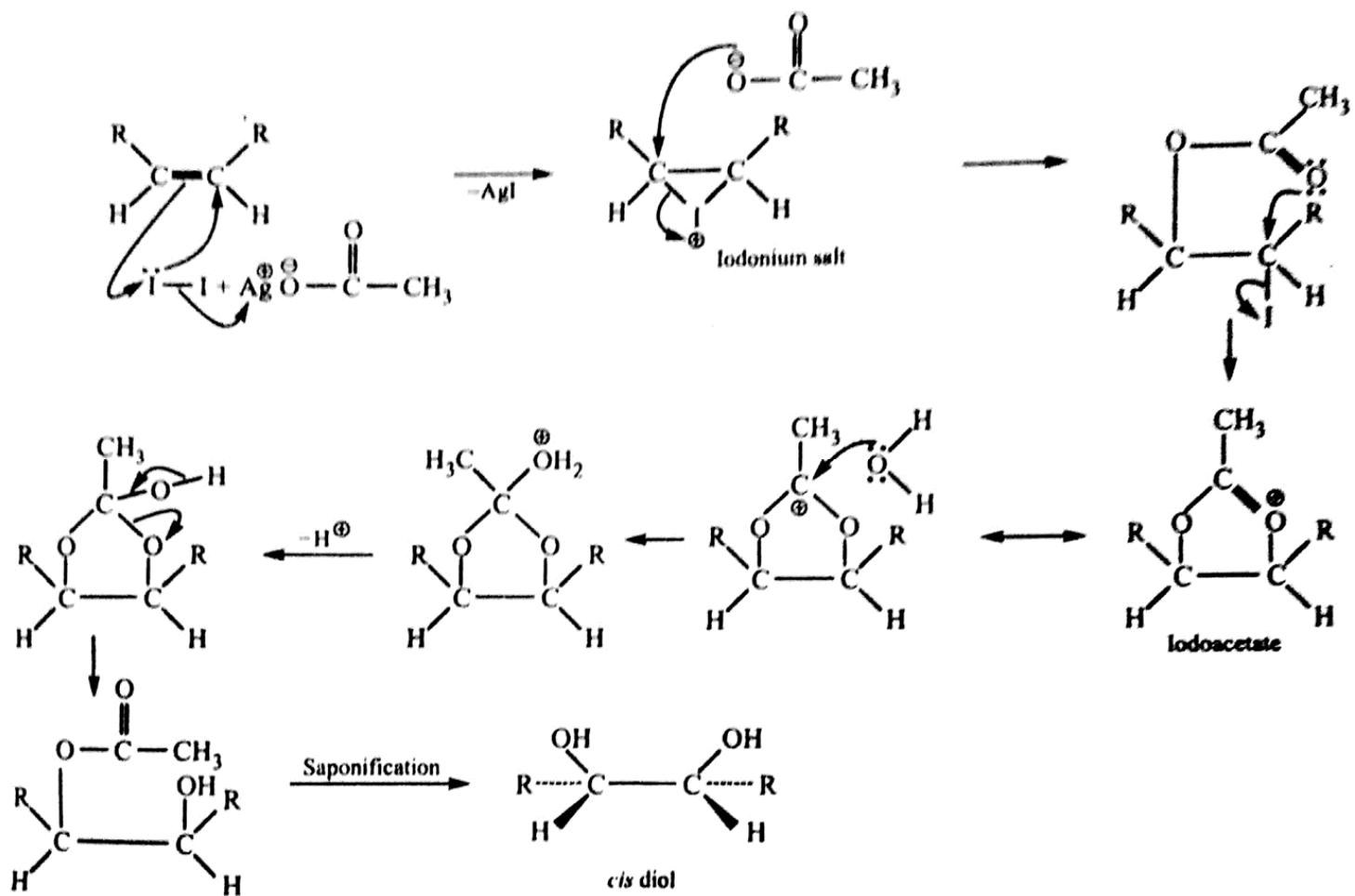
Woodward Reagent

- A solution of iodine and silver acetate or silver benzoate (in equimolar amount) in moist acetic acid is known as Woodward reagent
- It converts the alkenes into cis-1,2 diols
- In this reaction, olefin reacts with iodine in the presence of silver acetate to give an iodonium ion which undergoes displacement by acetate ion in the SN2 type reaction giving trans-iodoacetate
- Anchimeric assistance by the acetate group, together with the powerful bonding capacity of silver ion for iodine, gives a cyclic acetoxonium ion.
- The acetoxonium ion under wet conditions traps water and reacts to yield a cis-hydroxyacetate which on saponification yields Cis-diols.



The reaction of the iodine with the alkene is promoted by the silver acetate, thus forming an [iodinium ion](#) (3). The iodinium ion is opened via [S_N2 reaction](#) by acetic acid (or silver acetate) to give the first intermediate, the iodo-acetate (4). Through [anchimeric assistance](#), the iodine is displaced via another S_N2 reaction to give an [oxonium ion](#) (5), which is subsequently hydrolyzed to give the mono-ester (6).





- Oleic acid, on oxidation under Woodward procedure, gives erythro isomer
- Cyclohexene gives cis-diol

