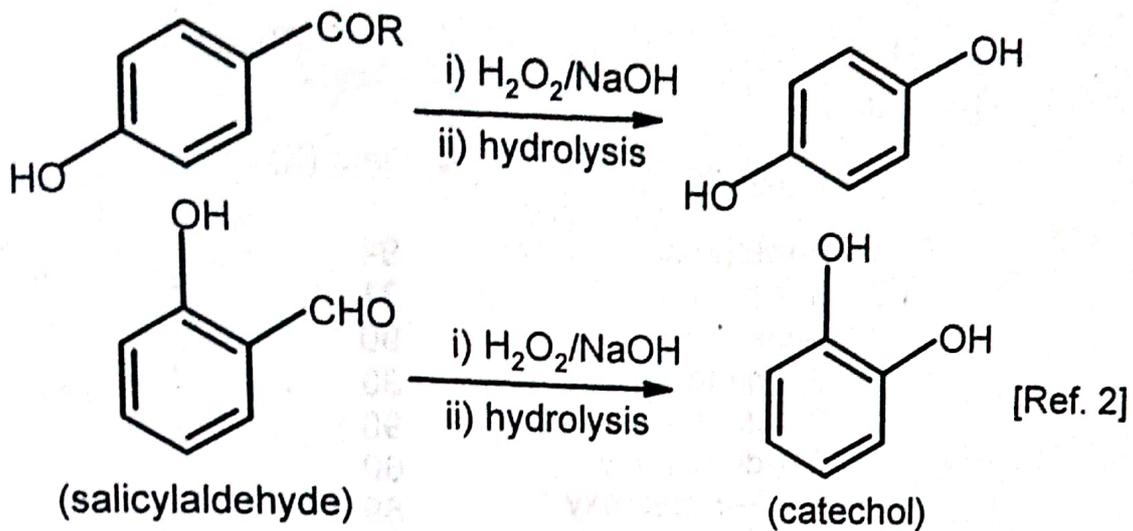
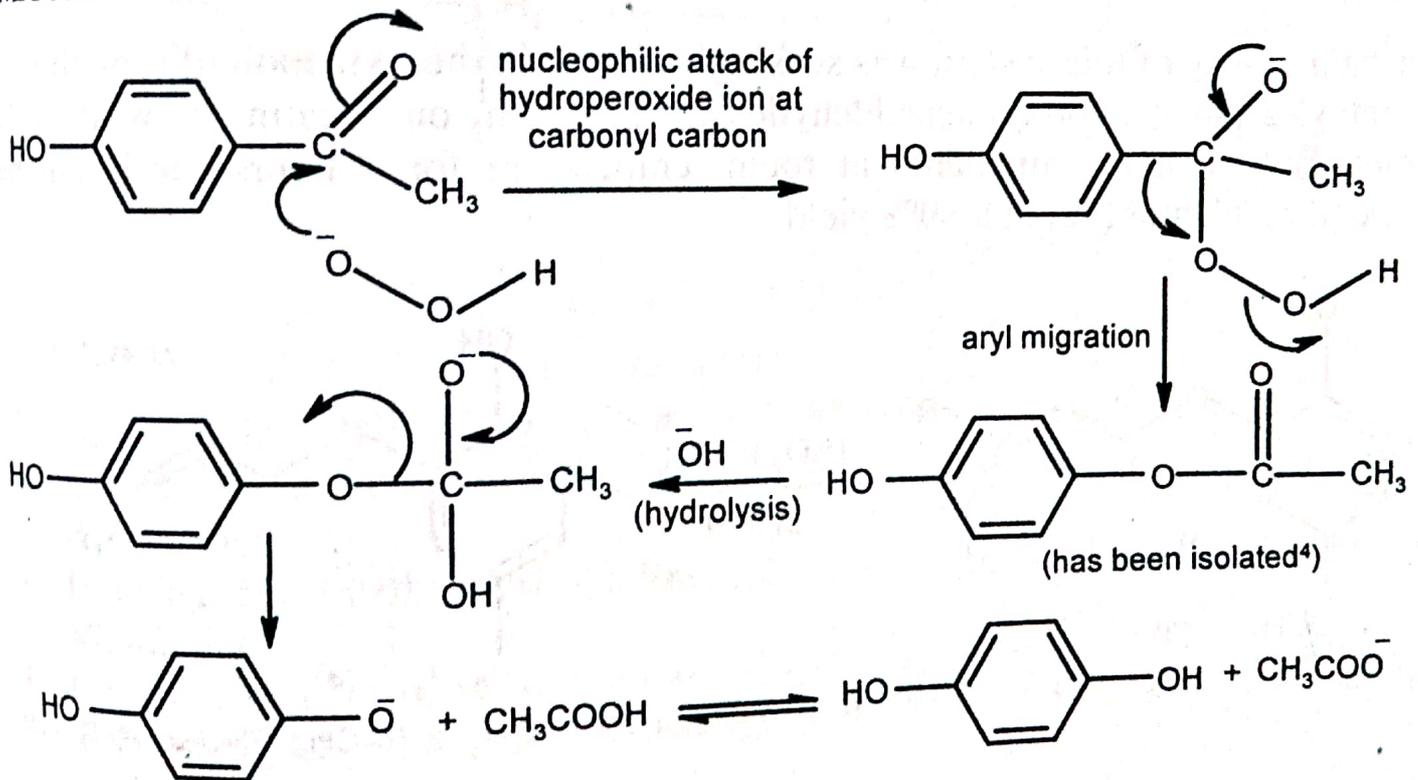


An aromatic aldehyde or ketone, having an OH or NH₂ group at the *ortho*- or *para*-position, is converted to phenolic derivative on treatment with alkaline hydrogen peroxide followed by hydrolysis; this reaction is known as *Dakin reaction* or *Dakin oxidation*¹.

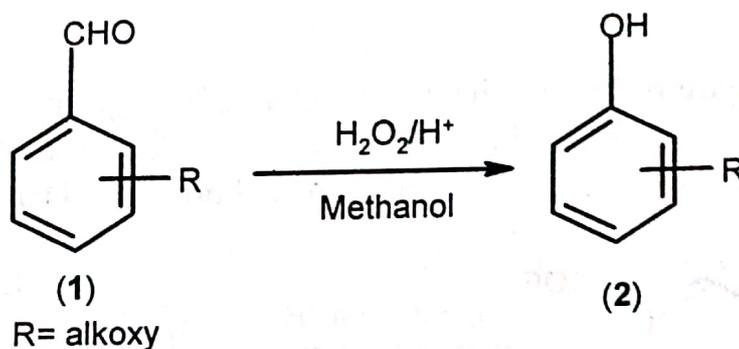


Mechanism



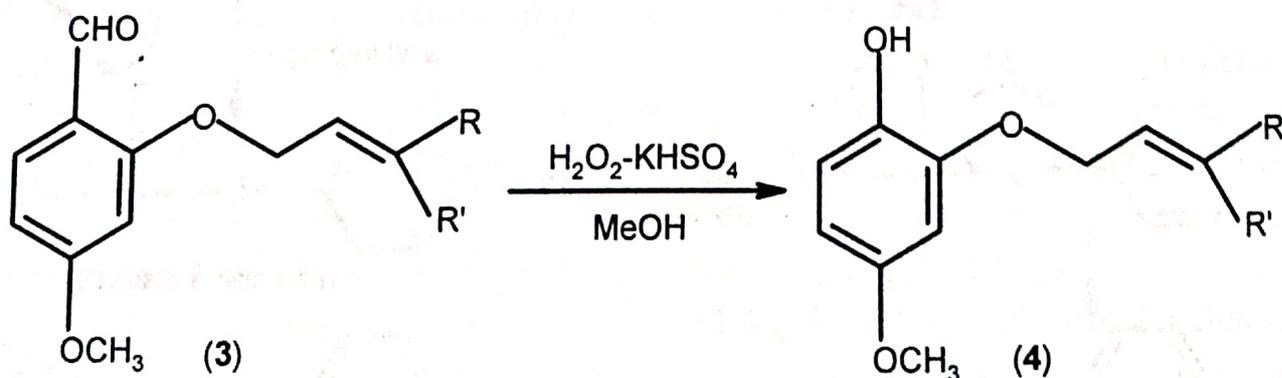
Critical Views

(a) Matsumoto *et al.*⁵ performed the reaction on aromatic aldehydes with an alkoxy group in the ring, but with no OH or NH₂; in this case acidic H₂O₂ (30-35% aqueous solution in methanol) was used. The oxidation is very much easy to handle.



<u>Substrate (1)</u>	<u>% Yield (2)</u>
2-methoxy	94
3-methoxy	31
4-methoxy	90
2,3-dimethoxy	30
2,4-dimethoxy	90
3,4-dimethoxy	60
2,4,6-trimethoxy	89
3,4-methylenedioxy	67

The superiority of this system was strikingly shown in the oxidation of 4-methoxy-2-(3-methyl-2-buten-1-yloxy)benzaldehyde (3a), which on treatment with 31% aqueous H₂O₂ in acidic methanol at room temperature for 4 hours furnished the corresponding phenol (4a) in a 80% yield.



(3a: R=R'=CH₃; b: R=CH₃, R'=H; c: R=R'=H)

(4a: R=R'=CH₃; b: R=CH₃, R'=H; c: R=R'=H)

(b) Urea-hydrogen peroxide adduct is stable, inexpensive and an easily handled reagent. Varma and Naicker⁶ have used this reagent in an efficient solid-state oxidation of hydroxylated aldehydes and ketones to the corresponding phenol derivatives.

