

## Anti-oxidants can be pro-oxidants

→ Vitamin C (Ascorbate)

- Is antioxidant - React with Superoxide & hydroxyl & form monodehydroascorbate & hydrogen peroxide ( $H_2O_2$ ) & water

- At high concentration - is oxidant

Not possible because when plasma concentration reaches  $30 \text{ mmol/L}$ , renal threshold reached & excreted in urine.

→  $\beta$  Carotene -

under low partial pressure of oxygen in most tissue - is antioxidant

under high partial pressure of oxygen in ~~the~~ lungs - is pro-oxidant.

→ Vitamin E -

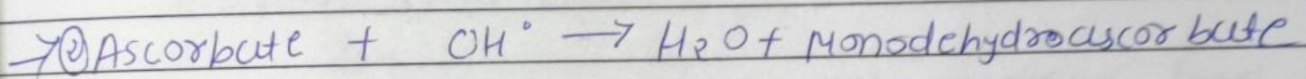
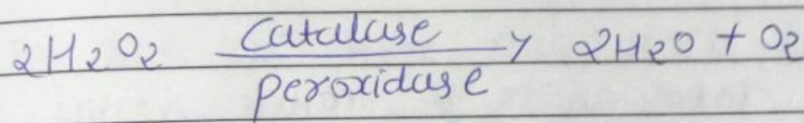
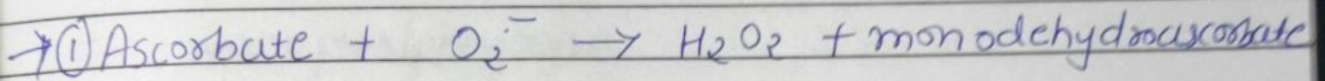
Antioxidant - form stable radical

↓  
persist long enough to undergo metabolism to nonradical products

→ Nitric oxide

→ Vitamin C

→ Antioxidant role



→ Pro-oxidant roles

