2025 Ch H1 Q8

Section: Nature's Chemistry

Topic: Oxidation of Food

Question summary

What is the change in mass when one mole of butanal (C_4H_8O) undergoes reduction to butan-1-ol ($C_4H_{10}O$)?

Worked solution

Reduction of butanal (C_4H_8O) to butan-1-ol ($C_4H_{10}O$) involves the gain of two hydrogen atoms (H_2).

Each mole of H_2 has a mass of 2 g.

Therefore, the overall increase in mass during reduction is +2 g per mole of butanal.

Final answer

D. +2 g

Revision tips

- Reduction of aldehydes produces primary alcohols by addition of hydrogen.

- Oxidation involves loss of hydrogen or gain of oxygen; reduction is the reverse.

- Compare molecular formulae to determine mass change due to added or removed atoms.