Transport

International Baccalaureate · IB Diploma · Biology · HL

Scope and prerequisites

This handout covers selected HL topics for the course first assessed in 2025; it is not the whole syllabus.

Prerequisites: read the stated quantities and units, and use arithmetic and the model conditions below.

The examples are original and fictional: they are not real measurements or real student investigations.

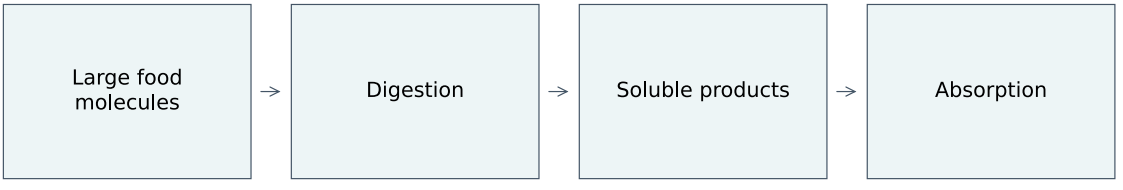
Digestion , transport and health evidence

What would explain this observation?

- Two foods can have the same mass but provide different nutrients. A health claim must distinguish the nutrient measured from the health outcome inferred.

Build the model

- Large insoluble food molecules are digested into smaller soluble molecules.
- Carbohydrases form sugars, proteases form amino acids, and lipases form fatty acids and glycerol.
- Bile emulsifies lipids and helps neutralize acidic stomach contents.
- **digestion**: Breakdown of large food molecules.
- **absorption** : Movement of soluble products into the body.



Digestion makes food molecules small and soluble enough to be absorbed

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Choose evidence that can test it

- Absorption moves soluble products into blood or lymph.
- Thin exchange surfaces and a large surface area shorten diffusion paths and increase transfer.
- Enzyme activity and transport are different processes.

In the lab: Use Benedict reagent with controlled heating for reducing sugars, iodine for starch, Biuret reagent for protein, and the ethanol emulsion test for lipids. Keep ethanol away from flames. Use positive and negative controls.

Work from known quantities

- Known: 6 of 24 study participants report a condition.
- Proportion = cases / total.
- Percentage = $6/24 \times 100 = 25\%$.
- The percentage describes this sample.
- It does not establish that one food caused the condition; confounders and how the sample was chosen matter.

Your turn: 9 of 36 participants report an outcome. Calculate the percentage.

Check the conclusion and its limits

- Bile is not an enzyme.
- A positive food test identifies a component under the test conditions; it does not show that a food is healthy or unhealthy in every diet.

Not true: A correlation between diet and illness proves causation. A correlation shows that two measurements vary together; it does not prove one causes the other. A confounding variable, reverse causation or chance could explain the link, so a controlled comparison is needed before claiming causation.

Key:

- Large insoluble food molecules are digested into smaller soluble molecules.
- Absorption moves soluble products into blood or lymph.
- Watch for: bile is not an enzyme.

Write from 15 percent of a sample

- 6 of 40 participants report an outcome.
- Find the percentage. The sample percentage is not proof that one food caused it.