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Haemoglobin Estimation and Interpretation

Experiment 11 - Practical Notes

Name: _____ Roll no.: _____ Date: _____

Aim

To observe a prescribed haemoglobin estimation method, calculate a teaching result and interpret it with the supplied laboratory interval.

Principle

Haemoglobin concentration describes the oxygen-carrying pigment in a volume of blood. Modern analysers may use validated non-cyanide photometric methods. A visual acid-haematin teaching method, where used, has different limitations. The named method, calibration and control status must accompany the result.

Requirements

- Instructor-selected analyser or photometer and its specified reagent system.
- Appropriate control, calibrator and supplied specimen or demonstration material.
- Method instructions and observation sheet.

Procedure

1. Identify the method

Record the instrument or teaching method and the reporting unit. Do not combine reagents or procedures from different methods.

2. Check readiness

Observe the instrument blank or zero, calibrator and control checks as prescribed.

3. Observe preparation

The instructor prepares and measures the supplied material using the method-specific quantities and reaction time.

4. Read the result

Record the reported Hb or blank-corrected absorbance. Apply the calibration calculation only if it is the validated calculation for that method.

5. Interpret

Compare with the supplied age- and context-appropriate interval. Consider CBC indices and clinical assessment; a low Hb finding does not itself establish the cause.

Observations and Record

Item	Value / description	Record
Method and unit	Instrument / g/dL or g/L	_____
Calibrator / control	Assigned concentration / accepted result	_____
Specimen result	Reported Hb or absorbance	_____

Worked Example

The numbers below are illustrative; enter your own observations in the record.

- One-point linear teaching example: standard Hb = 15.0 g/dL; standard absorbance = 0.50; test absorbance = 0.40, all blank-corrected.
- Hb = (0.40 ÷ 0.50) × 15.0 = 12.0 g/dL = 120 g/L.
- This formula requires a valid linear method and matched conditions; use the instrument's calibration when the method is not a simple one-point comparison.

Result

Method: ____. Haemoglobin = ____ g/dL or ____ g/L. The result was considered with the supplied interval and other relevant information.

Precautions

- Use only the specified reagent system; do not prepare hazardous historical reagents for this exercise.
- Turbidity, clots or poor specimen identification can invalidate a result.
- Do not infer iron deficiency from Hb alone or advise treatment from the classroom result.

Viva Questions and Answers

1. What does Hb concentration measure?

The mass concentration of haemoglobin in blood.

2. How are g/dL and g/L related?

Multiply g/dL by 10 to obtain g/L.

3. Why is a visual teaching method limited?

Colour matching and observer judgement can reduce precision compared with validated instrument measurement.

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