

Commentary on candidate 3 evidence

Enzyme inhibition

The evidence for this candidate has achieved the following marks for each section of this course assessment component.

Section	Mark available	Mark awarded	Comments	
1 Aim	1	0	The aim of the investigation is not stated clearly enough. There is no indication of which aspect of the enzyme is being investigated (for example, activity).	
2 Underlying biology	4	4	Four expanded descriptions/explanations, that are relevant to the aim, are given at a depth appropriate to Higher level: <ul style="list-style-type: none"> ◆ 1 mark (paragraph 1) – ‘The active site... reaction will take place.’ ◆ 1 mark (paragraph 2) – ‘The molecules of... with the active site.’ ◆ 1 mark (paragraph 3) – ‘Non-competitive inhibitors... rate of reaction will be.’ ◆ 1 mark (paragraph 4) – ‘Feedback inhibition... pathway will stop.’ 	
3 Data collection and handling	5	a	0	Although the independent variable, key chemicals and measurement of the dependent variable are given, there is too much additional detail. Too many references to volumes, temperature and time are given, making this description more like a protocol than a summary.
		b	1	Repeated measurements are included and the raw (unprocessed) data is sufficient ie, 5 molarities over a suitable range of values (0 to 0.4M).
		c	0	Although the experimental data is presented in a table with correct headings and units where appropriate, the mean value (average) for 0.1M is rounded incorrectly.
		d	1	A diagram and associated information is included, which is clearly relevant to the aim.

		e	1	The source of the research data is cited (1) in the body of the report and referenced as per the instructions for candidates.
4 Graphical presentation	4	a	1	The graph produced is based on the candidate's experimental data. A line graph has been selected which is the appropriate format for this data.
		b	1	Both axes have suitable scales.
		c	1	Both axes have suitable labels and units.
		d	1	All points are plotted accurately and lines drawn to link each of them.
5 Analysis	1	0	<p>The percentage change calculation is incorrect as total values have been used rather than average values. One of the values is incorrect (4M instead of 0.4M).</p> <p>There is no link given between the indirect measurement (absorbance) and enzyme activity.</p>	
6 Conclusion	1	1	Although the aim mark was not awarded, the weak aim provided, along with the experimental data presented, allows a valid conclusion to be drawn.	
7 Evaluation	3	2	<p>1 mark was awarded for the suggested use of a water bath to keep the temperature constant throughout, as temperature affects the working of enzymes.</p> <p>1 mark was awarded for an appropriate evaluation of the literature source describing how the reliability of the data could be improved.</p> <p>No marks were awarded for the following reasons:</p> <ul style="list-style-type: none"> ◆ The reference to repeats is irrelevant as the candidates are told to do this in the instructions for candidates. ◆ The use of a control has been mentioned but no justification for it has been provided. ◆ Using a syringe for accuracy has not been justified in terms of the volume being measured more accurately. 	

8 Structure	1	1	An informative title is given and the report flows in a logical manner.
Total	20	15	