

## Commentary on candidate 4 evidence

### Inhibition of catechol oxidase in banana by lead

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	1	The aim of the investigation is clearly stated.	
2 Underlying biology	4	2	<p>Two expanded descriptions/explanations, that are relevant to the aim, are given at a depth appropriate to Higher level:</p> <ul style="list-style-type: none"> <li>◆ 1 mark (lines 5 – 10) – ‘Induced fit is... reaction higher.’</li> <li>◆ 1 mark (lines 14 – 20) – ‘Competitive inhibitors bind... substrate cannot bind.’</li> </ul> <p>Two more marks may have been awarded if the candidate had expanded on the effect / impact of each inhibitor.</p>	
3 Data collection and handling	5	a	0	Although the independent variable has been mentioned, there is no indication that different concentrations of lead ethanoate are being used in each test tube.
		b	1	Repeated measurements are included and the raw (unprocessed) data is sufficient, ie 5 concentrations over a suitable range of values (0 to 4).
		c	0	<p>The heading for the first column is incomplete – lead instead of lead ethanoate, and no units are given.</p> <p>The overarching heading for the other columns does not state what was measured. If transmission has been measured, units would be required.</p> <p>All averages are correctly calculated.</p>

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		d 0	The research data does not have any mention of enzymes and there is no linking statement anywhere in the report or an adequate link to their experiment.
		e 0	No citation is provided. The reference is included beside the table of data.
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 0	Although a suitable scale has been provided on the y-axis, the x-axis scale is non-linear.
		c 0	Although the x-axis label is incomplete, this mark was not awarded for the table heading and is not penalised a second time for carrying the error forward. However, the label on the y-axis is incorrect.
		d 1	All points are plotted within a half box tolerance, and lines drawn to link each of them.
5 Analysis	1	0	The analysis has not been linked to the aim of the investigation (no mention of enzyme activity).
6 Conclusion	1	0	A valid conclusion is not given, as it does not fully relate to the aim of the investigation. Less catechol oxidase does not link to catechol oxidase activity.
7 Evaluation	3	0	No marks were awarded for the following reasons: <ul style="list-style-type: none"> <li>◆ The information regarding the internet source is not an evaluation of it.</li> <li>◆ No justification is provided as to why the time should have been measured.</li> <li>◆ No justification is provided as to why repeating and averaging is more useful in terms of atypical results.</li> </ul>
8 Structure	1	1	An informative title is given and the report flows in a logical manner.
<b>Total</b>	<b>20</b>	<b>7</b>	