

Assay of β -Glucosidase

Laxman Manjhi 2019BB10034

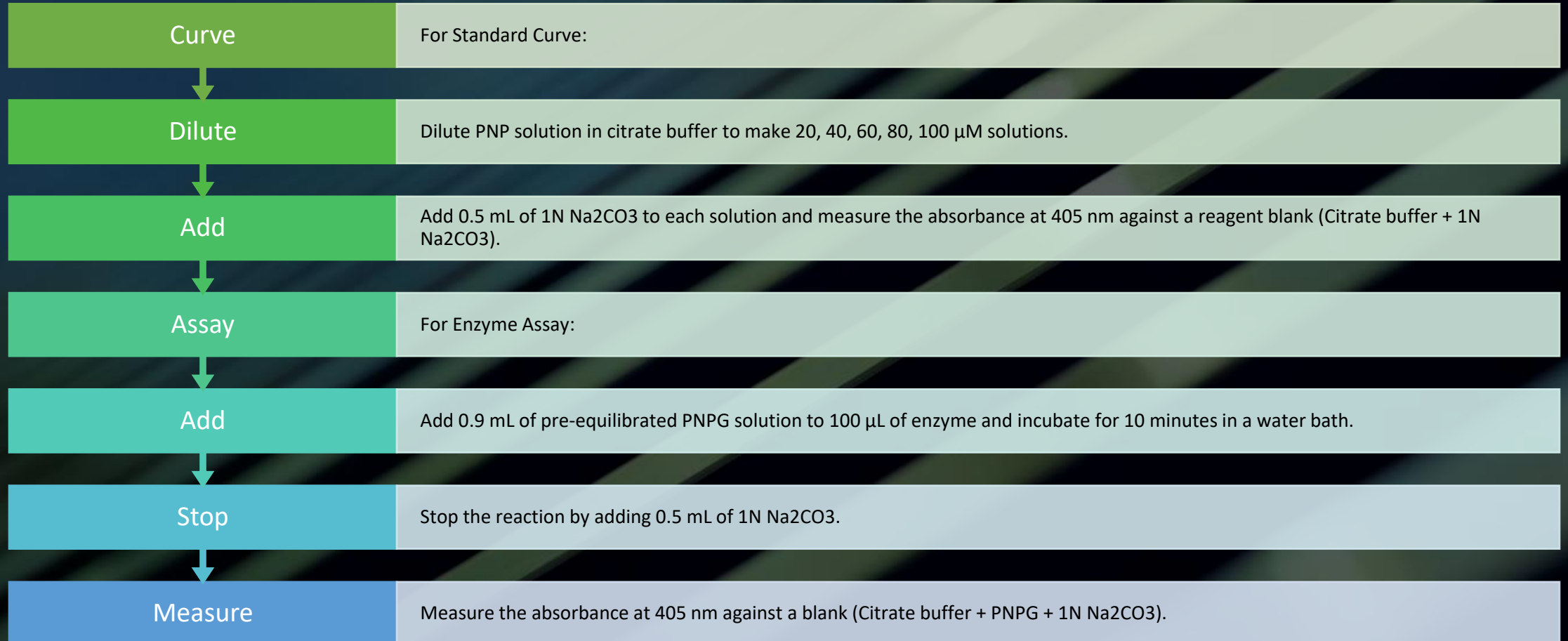
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Background

- β -Glucosidase is an enzyme that breaks down β 1 \rightarrow 4 bonds in glucose or glucose-substituted molecules
- It releases glucose from β -D-glucosides
- Activity can be measured by hydrolysis of p-nitrophenol- β -D-glucopyranoside (PNPG)
- PNP formed by hydrolysis is proportional to the amount of β -glucosidase at the time of reaction
- PNP absorbance can be measured at 405 nm
- Reaction is stopped by adding Na_2CO_3 which shifts the pH to alkaline (pH = 11.0)
- PNP is converted to yellow-colored anionic form and β -glucosidase is inactivated at alkaline pH.

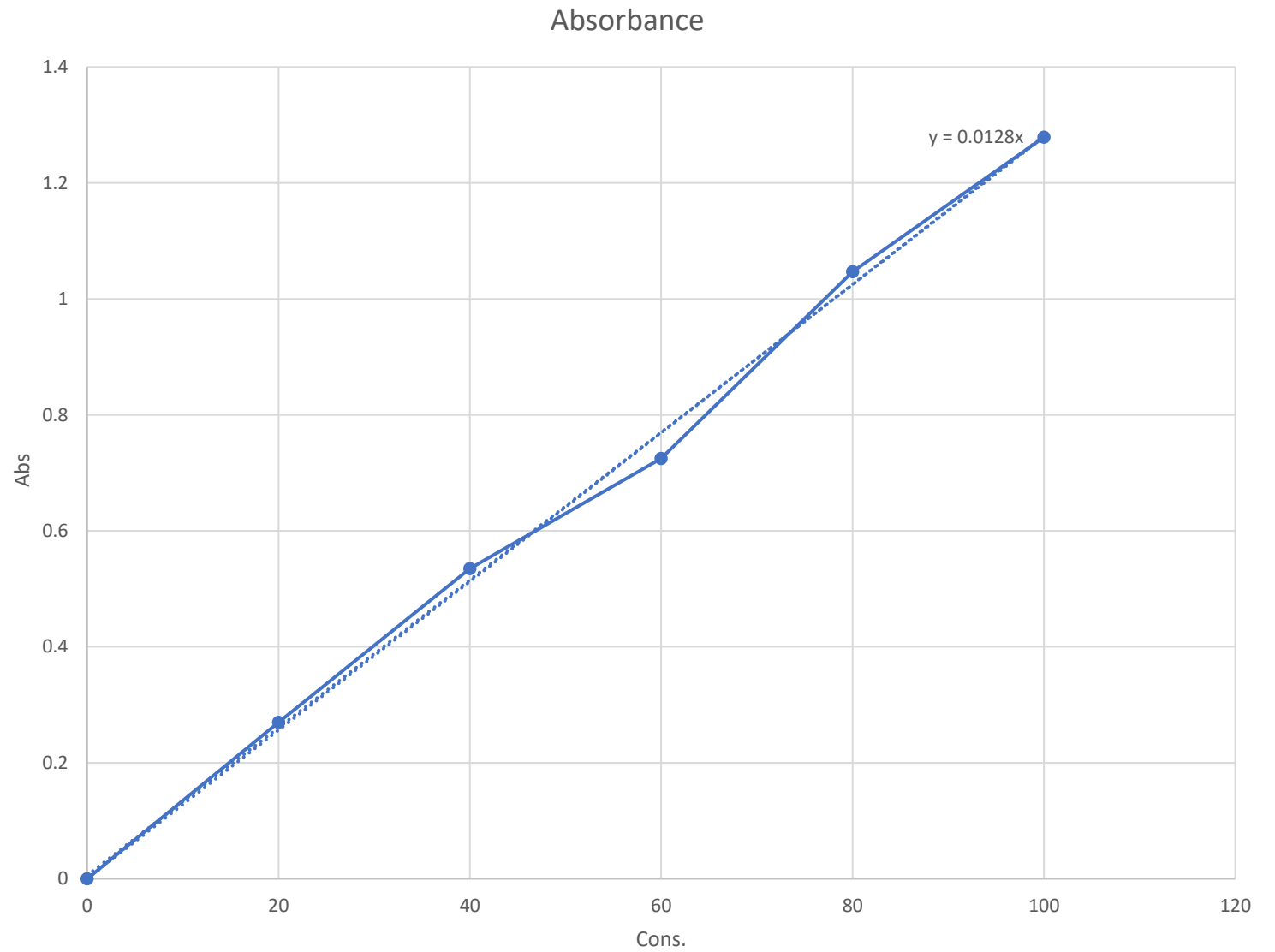
Method



Observation

Conc μmol	Absorbance
0	0
20	0.27
40	0.535
60	0.725
80	1.047
100	1.279
Unknown	
50C	1.154
RT	0.443

Conc. vs Abs plot



Calculation

Conc. of PNP
released at 50C =
90 μmol

Activity of enzyme =
 $(90 \times 10) / (10 \times 0.1) =$
900 IU/mL

Conc. of PNP
released at RT =
34.60 μmol

Activity of enzyme =
 $(34.60 \times 10) / (10 \times 0.1)$
= 346 IU/mL

The background is a complex geometric pattern composed of numerous triangles in various shades of purple, from dark indigo to light lavender, set against a medium grey background. The triangles are arranged in a way that creates a sense of depth and movement, with some appearing to overlap others. The overall effect is a modern, minimalist aesthetic.

Thank you