APPENDIX F: Example of experimental data calculation

1. β-CD cyclization activity calculation

An example of calculation is shown as below:

A_{550nm} for control experiment = 1.382, 1.387, 1.392 (in triplicate).

= 1.387 (mean)

A_{550nm} for sample = 0.69, 0.697, 0.7 (in triplicate).

= 0.696 (mean)

Percentage of intensity reduction, %

= (A_{550nm} control – A_{550nm} sample) / A_{550nm} control x 100%

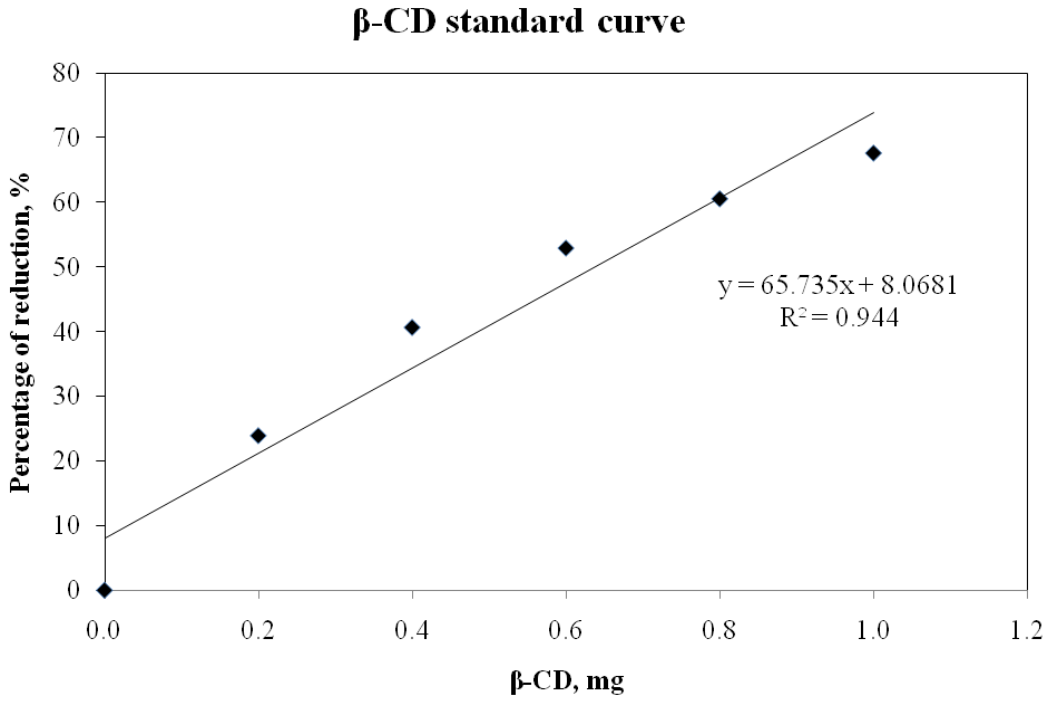
= (1.387 – 0.696) / 1.387 x 100%

= 49.82%

Enzyme activity, U/ml:

= [(1/vol sample) (1000) (Y) (% of intensity reduction)] / [($MW_{β-CD}$) (assay time)]

Note: sample volume is 0.1 ml; Y is the amount of β-CD that causes a 100% phenolphthalein reduction. This value is obtained by dividing 100 (100%) with the slope of the graph for β-CD standard curve; $MW_{β-CD}$ is 1135; assay time is 10 min. The standard curve is shown below



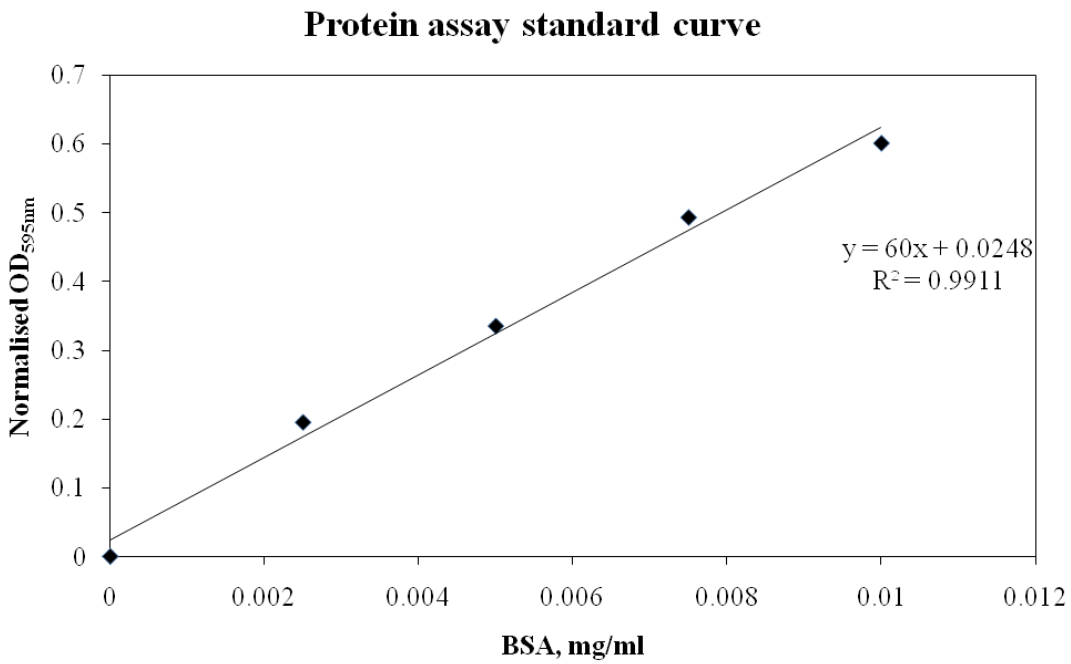
Therefore, in this example, the enzyme activity for the sample is:

= [(1/0.1) (1000) (1.399) (49.82)] / [(1135) (10)]

= 61.41 U/ml

2. Protein assay calculation

Protein content was determined using Bradford reagent. The protein concentration of a sample is calculated by solving the equation y = 60x + 0.0248. Y is the normalised reading at A_{595nm} while x is the protein concentration of the sample.



3. β-galactosidase activity calculation:

Enzyme activity, U/ml

= [(OD_{420nm} sample– OD_{420nm} control) – 0.0393] x 10^6/ (11.993 x $MW_{p\text{-nitrophenol}}$ x assay time)

Note: the value '0.0393' and '11.993' is obtained by solving *p*-nitrophenol standard curve equation y = 11.993x + 0.0393; $MW_{p\text{-nitrophenol}}$ is 139.11; assay time is 10 min.