



BiAnaCA



Biochemical assay **Analyzer and **C**alculator**

BiAnaCA: A freely accessible tool for data analysis of end-point
biochemical assay

BiAnaCA ~ 0.1 Tutorial

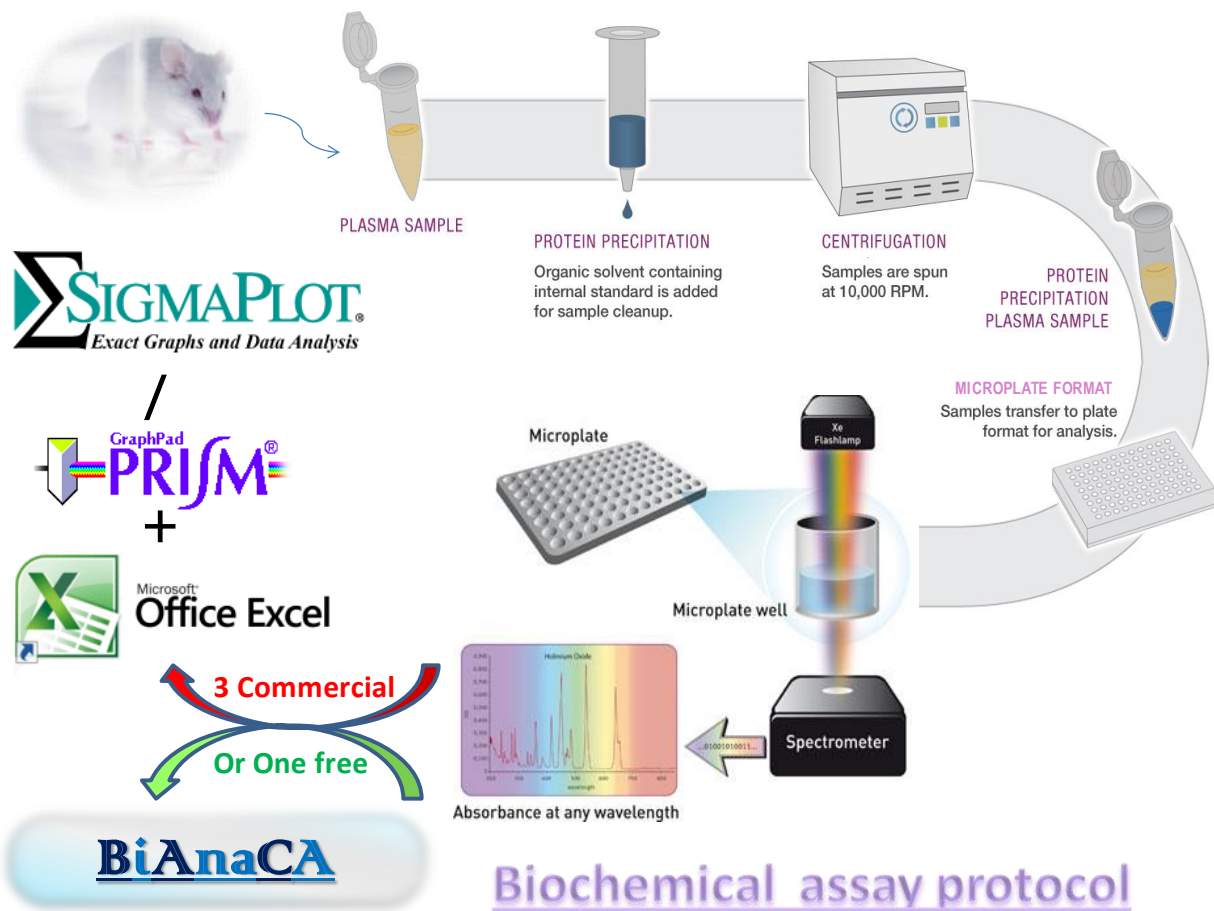


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Introduction

A biochemical assay is an investigative (analytic) procedure in laboratory medicine, pharmacology, environmental biology, continuous delivery, and molecular biology for qualitatively assessing or quantitatively measuring the presence or amount or the functional activity of a target entity (the analyte) in cuvettes or 96- well Microplates using Colorimeter, Spectrophotometer or Microplate reader.



Applications

- BiAnaCA can be used not just for biochemical assays but any assay which involves spectrophotometric absorbance readings and you want to calculate the unknown concentration from the standard point or calibration curve method.

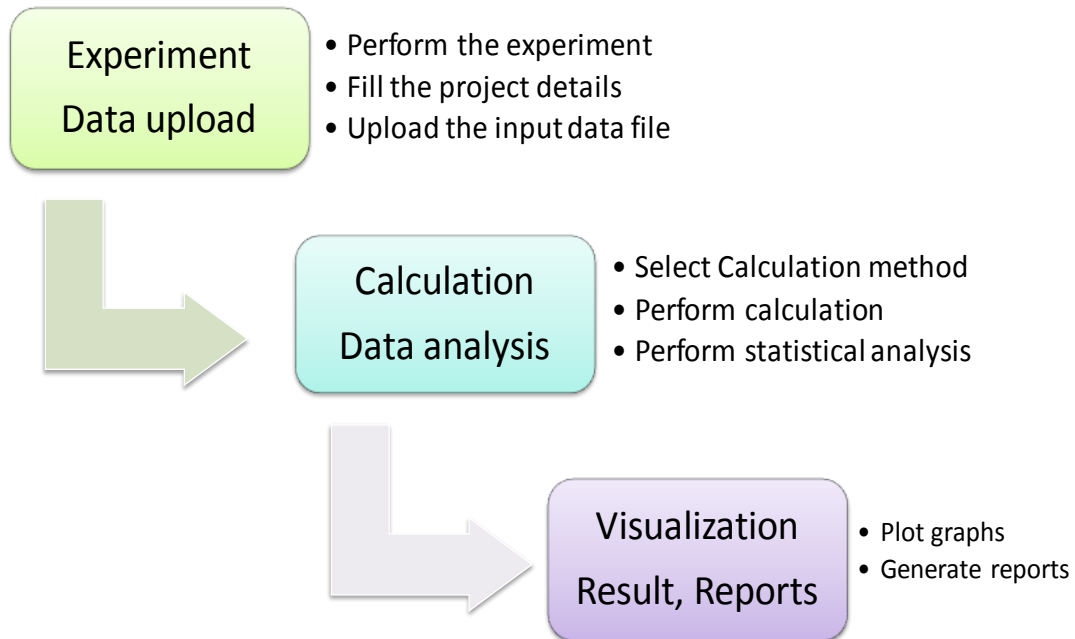
- Can be used well for 96 well plate but it is not restricted to 96 well it can be used for any number of large data set if you provide in the proper .csv file format.
- Can be used separately for linear regression curve analysis and statistical analysis also for any other applications
- Can generate .pdf reports by a software which can be help as regulatory requirement and documentary evidence
- It is totally free in nature and Fast, user friendly and efficient enough for academic or industrial research
- It is applicable not in just pharmacy or medical field but any clinical, biotech, analytical chemistry, agriculture and science field

Download and Installation

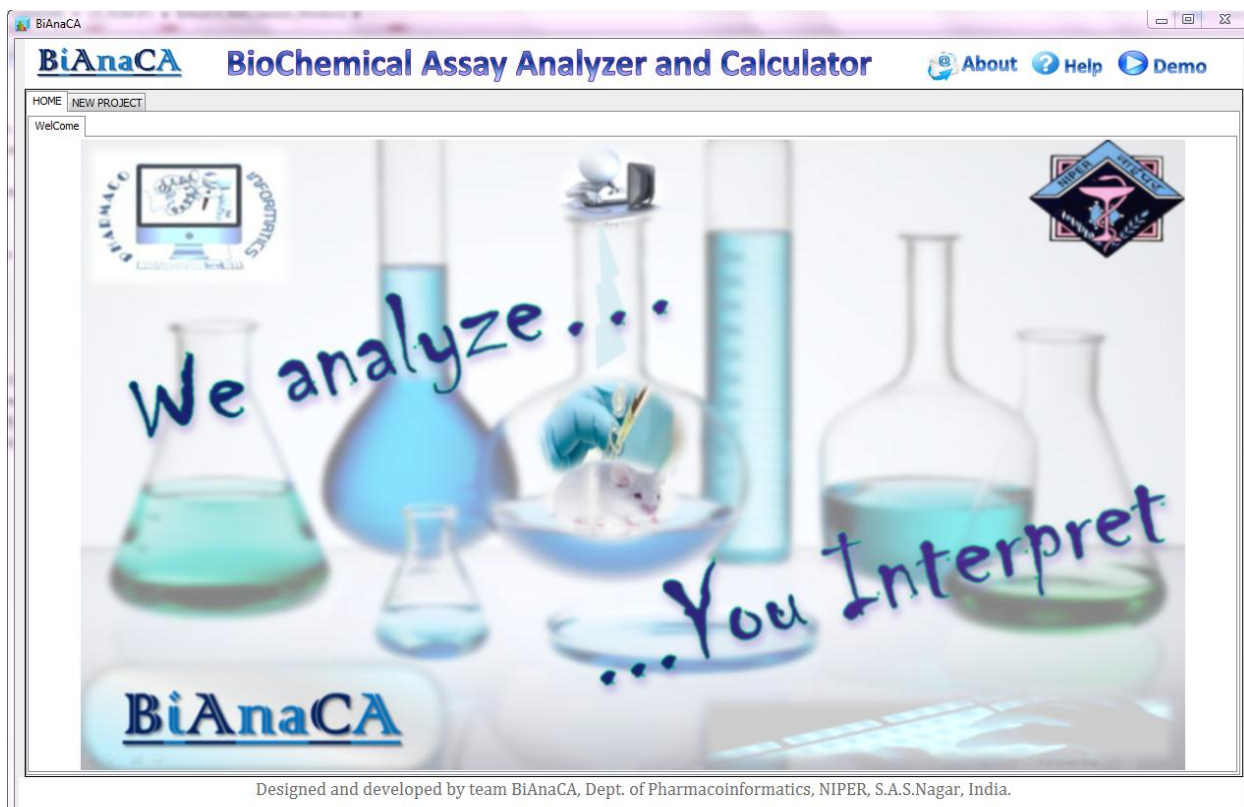
- Download the BiAnaCA for your system from http://www.niper.ac.in/pi_dev_tools/BiAnaCA/index.php
- To run the BiAnaCA you just need java run time environment (JRE) properly installed and updated as per your system configuration.
- Download and update latest java JRE.
- Download the zip folder and extract all files to a folder where you want to install it. You can install it anywhere but make sure that it has included executable BiAnaCA_version_0.1.jar file and a lib folder with demo folder inside lib folder. Do not move or Rename files within it.
- Click on BiAnaCA_version_0.1.jar to start the application.
- You can find the tutorial and sample files in the folder lib/demo/.

Step-wise workflow for BiAnaCA

Layout of workflow



Home screen



BiAnaCA

BiAnaCA BioChemical Assay Analyzer and Calculator [About](#) [Help](#) [Demo](#)

HOME | NEW PROJECT

Welcome

We analyze...

...You Interpret

BiAnaCA

Designed and developed by team BiAnaCA, Dept. of Pharmacoinformatics, NIPER, S.A.S.Nagar, India.

Step 1: Fill the experiment details in the given boxes

- Name of your assay
- Name of person, date and all other notes which you want to print in report fill them. You can copy paste with Ctrl+C/Ctrl+V functions.

The screenshot displays the BiAnaCA software interface. The title bar reads "BiAnaCA". The main header features the logo "BiAnaCA BioChemical Assay Analyzer and Calculator" and navigation links for "About", "Help", and "Demo". Below the header, there are tabs for "HOME" and "NEW PROJECT". A secondary set of tabs includes "Project Detail", "Result Data Sheet", "Analysis Reports", "Graphical Plots", and "Calibrator curve plots".

The "Project Detail" section (left) contains the following fields:

- Name of the assay: [Text Input]
- Experiment performed by: [Text Input]
- Experiment performed on: [Text Input]
- Experimental notes: [Text Area]

The "Data Upload box" section (right) is titled "Provide the absorbance data from?". It offers two options:

- .txt/.csv file upload
- Manual entry in data sheet

A "Browse" button is next to the "File Path Selected:" field. To the right, there is a 96-well plate data file visualization and checkboxes for "Standard at Start" (unchecked) and "Standard at End" (checked). A "Limit for outliers in replicates (in % C.V.):" field is set to 10.

The "Group Patterns" section (bottom left) is titled "Fill in the details of samples for your assay experiment". It includes:

- Number of groups: 1 (with a "+ Standard (1 Smp)" checkbox checked)
- Number of sample replicates: 3 (with a "+ Blank (1 Smp)" checkbox checked)
- An "OK, Start" button
- A table with columns "Group no.", "Group code", and "No. of samples". A "Read me ->" button is positioned below the table.
- "Reset" and "Submit" buttons at the bottom.

The "Calculation Panel" section (bottom right) is titled "Calculation method selection:". It offers:

- Single Standard
- Multiple Standards

Input fields include:

- Enter the Standard concentration: [Text Input]
- Mean Standard absorbance reading: [Text Input]
- Dilution factor for sample readings: 1
- Standard/sample concentration units: [Text Input]
- Number of points in Std. calibration curve: [Text Input]

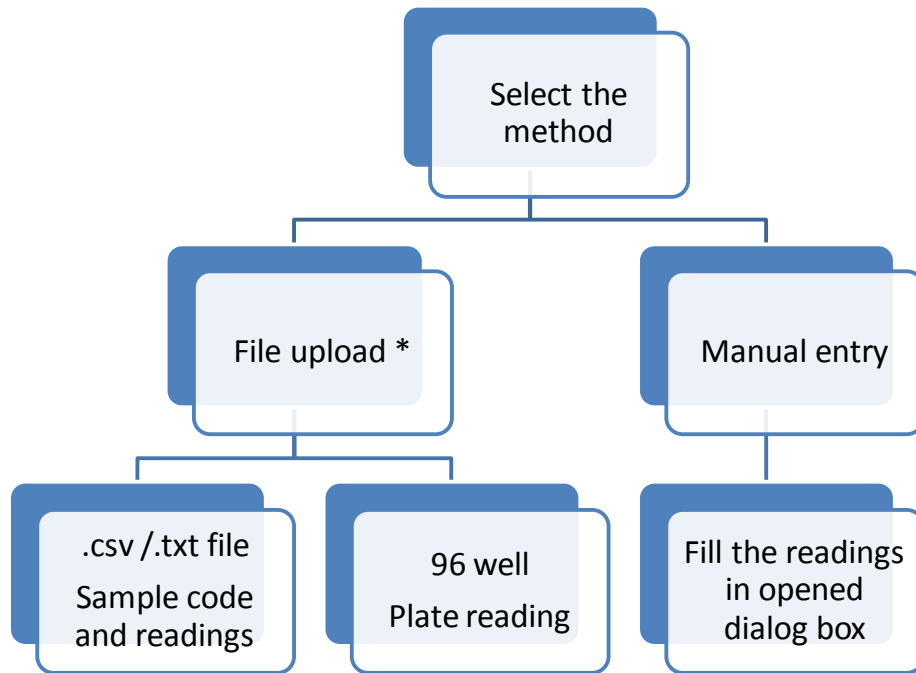
Buttons for "Calculate", "Plot Equation", and "Check Outliers" are at the bottom. A table with columns "Concentration" and "Absorbance" is visible on the right side of the panel.

At the bottom of the window, a footer states: "Designed and developed by team BiAnaCA, Dept. of Pharmacoinformatics, NIPER, S.A.S.Nagar, India."

Step 2: Fill the groups and sample replicate details

- Give the number of groups like control, treatment A, B, C etc. or groups like formulation A, B, C or group of compounds etc. excluding standard and blank.
- Tick the whether standard and/or blank were used or not.
- Enter the number of groups and click enter.
- Enter the number of replicates performed for each sample. E.g. 1 for single, 2 for duplicate and 3 for triplicate like wise. Click on **OK, Start**.
- Now enter the code of group and number of samples in each group. You can use tab and arrow keys for the navigation purpose.
- Click **Submit** for further process to upload the reading data or you can reset for new details.

Step 3: Upload the input data



*To view the sample files go to Lib//demo// TestData.csv, or TestData.txt, or Test_96WellData.csv

Select the option, browse and upload the file as per given format or manually enter the data

BiAnaCA BioChemical Assay Analyzer and Calculator

HOME | NEW PROJECT

Project Detail | Result Data Sheet | Analysis Reports | Graphical Plots | Calibrator curve plots

Project Detail

Name of the assay: Demo

Experiment performed by: User

Experiment performed on:

Experimental notes: Temp: 25

Data Upload box

Provide the absorbance data from?

.txt/.csv file upload Manual entry in data sheet

Standard at Start Standard at End

 _browse_option.csv (96-well plate data file)

Limit for outliers in replicates (in % C.V.): 10

Group Patterns

Fill in the details of samples for your assay experiment

Number of groups: 4 + Standard (1 Smp)

Number of sample replicates: 3 + Blank (1 Smp)

Group no.	Group code	No. of samples
1	Control	7
2	Treatment A	7
3	Treatment B	8
4	Treatment A+B	8

Calculation Panel

Calculation method selection:

Single Standard Multiple Standards

Enter the Standard concentration: 100

Mean Standard absorbance reading: 0.01

Dilution factor for sample readings: 1

Standard/sample concentration units: sd

Number of points in Std. calibration curve:

then do calculate
Click on home
then select manual entry button
it will open table with data
change samople code if u wish
or else do submit there
and now click calculate
do analysis.

Concentration Absorbance

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Option 1: for uploading a .csv/.txt file with the absorbance readings sorted sample-wise

Format of Data.csv file (Save as .CSV
coma separated value format from excel)

Format of Data.txt file (give tab -> to
separate values and enter for next sample)

SAMPLECODE	OD1	OD2	OD3
CTRL-C-1-H	0.071	0.07	0.072
CTRL-C-1-M	0.053	0.056	0.059
CTRL-C-1-T	0.056	0.061	0.06
CTRL-C-1-HM	0.067	0.071	0.083
CTRL-C-1-HT	0.055	0.057	0.055
CTRL-C-2-H	0.062	0.072	0.063
CTRL-C-2-M	0.069	0.082	0.072
HSD-S-3-H	0.081	0.083	0.077
HSD-S-3-M	0.094	0.099	0.099
HSD-S-3-T	0.087	0.093	0.097
HSD-S-4-HM	0.09	0.096	0.095
HSD-S-4-HT	0.125	0.131	0.123
HSD-S-4-H	0.14	0.152	0.149
HSD-S-5-M	0.082	0.087	0.092
UNX-U-6-M	0.073	0.07	0.072
UNX-U-6-T	0.062	0.07	0.062
UNX-U-6-HM	0.08	0.091	0.091
UNX-U-6-HT	0.094	0.105	0.097
UNX-U-6-MT	0.074	0.074	0.069
UNX-U-7-H	0.074	0.075	0.073
UNX-U-7-M	0.075	0.089	0.083
UNX-U-T-T	0.081	0.088	0.089
UNX+HSD-US-8-H	0.138	0.141	0.141
UNX+HSD-US-8-M	0.105	0.105	0.104
UNX+HSD-US-8-T	0.15	0.158	0.148
UNX+HSD-US-9-HM	0.146	0.155	0.157
UNX+HSD-US-9-HT	0.157	0.173	0.168
UNX+HSD-US-9-MT	0.111	0.115	0.115
UNX+HSD-US-10-H	0.104	0.102	0.102
UNX+HSD-US-10-T	0.108	0.114	0.108
STD	0.079	0.081	0.082
BLANK	0	0	0

First row Titles
 First column just sample code
 Samples in the Sequence of given group
 Details
 Save as .csv file
 Template file Available in folder Lib\demo\data.csv

```

1 SAMPLECODE OD1 OD2 OD3
2 CTRL-C-1-H 0.071 0.07 0.072
3 CTRL-C-1-M 0.053 0.056 0.059
4 CTRL-C-1-T 0.056 0.061 0.06
5 CTRL-C-1-HM 0.067 0.071 0.083
6 CTRL-C-1-HT 0.055 0.057 0.055
7 CTRL-C-2-H 0.062 0.072 0.063
8 CTRL-C-2-M 0.069 0.082 0.072
9 HSD-S-3-H 0.081 0.083 0.077
10 HSD-S-3-M 0.094 0.099 0.099
11 HSD-S-3-T 0.087 0.093 0.097
12 HSD-S-4-HM 0.09 0.096 0.095
13 HSD-S-4-HT 0.125 0.131 0.123
14 HSD-S-4-H 0.14 0.152 0.149
15 HSD-S-5-M 0.082 0.087 0.092
16 UNX-U-6-M 0.073 0.07 0.072
17 UNX-U-6-T 0.062 0.07 0.062
18 UNX-U-6-HM 0.08 0.091 0.091
19 UNX-U-6-HT 0.094 0.105 0.097
20 UNX-U-6-MT 0.074 0.074 0.069
21 UNX-U-7-H 0.074 0.075 0.073
22 UNX-U-7-M 0.075 0.089 0.083
23 UNX-U-T-T 0.081 0.088 0.089
24 UNX+HSD-US-8-H 0.138 0.141 0.141
25 UNX+HSD-US-8-M 0.105 0.105 0.104
26 UNX+HSD-US-8-T 0.15 0.158 0.148
27 UNX+HSD-US-9-HM 0.146 0.155 0.157
28 UNX+HSD-US-9-HT 0.157 0.173 0.168
29 UNX+HSD-US-9-MT 0.111 0.115 0.115
30 UNX+HSD-US-10-H 0.104 0.102 0.102
31 UNX+HSD-US-10-T 0.108 0.114 0.108
32 STD 0.079 0.081 0.082
33 BLANK 0 0 0
    
```

Option 2: for manual entry

Format for manual entry in data sheet. After entering data, you can also save it as a .csv file

The screenshot displays the BiAnaCA software interface. On the left, a 'Data Entry Form' window is open, showing a table with columns for 'Sr.no', 'Sample code', 'Obs 1', 'Obs 2', and 'Obs 3'. The 'Sample code' column contains 32 entries, including 'Group Control: Sample 1' through 'Group Control: Sample 6', 'Group Treatment A: Sa...' through 'Group Treatment A: Sa...' (rows 8-13), 'Group Treatment B: Sam...' through 'Group Treatment B: Sam...' (rows 14-23), 'Group Treatment A+B: S...' through 'Group Treatment A+B: S...' (rows 24-30), 'Standard' (row 31), and 'Blank' (row 32). A blue oval highlights the 'Sample code' column, with the text 'Editable Sample codes' written in green next to it. The table has buttons for 'Ok Submit', 'Reset', and 'Export to CSV' at the top. The main window on the right is titled 'Absorbance Data from ?' and features a radio button for 'Manual Entry in Data Sheet' (circled in red), a '(in % C.V.)' dropdown menu set to '10' (circled in red), and a 'Check Outliers' button. The footer text reads: 'Designed and developed by team BiAnaCA, Dept. of Pharmacoinformatics, NIPER, S.A.S.Nagar, India.'

Option 3: for uploading unsorted absorbance readings in 96-or more well format

Format of 96 well plate readings in unsorted form (Save as .CSV comma separated value format from excel)

	A	B	C	D	E	F	G	H	I	J	K
1	0.071	0.07	0.072	0.053	0.056	0.059	0.056	0.061			
2	0.06	0.067	0.071	0.083	0.055	0.057	0.055	0.062			
3	0.072	0.063	0.069	0.082	0.072	0.081	0.083	0.077			
4	0.094	0.099	0.099	0.087	0.093	0.097	0.09	0.096			
5	0.095	0.125	0.131	0.123	0.14	0.152	0.149	0.082			
6	0.087	0.092	0.073	0.07	0.072	0.062	0.07	0.062			
7	0.08	0.091	0.091	0.094	0.105	0.097	0.074	0.074			
8	0.069	0.074	0.075	0.073	0.075	0.089	0.083	0.081			
9	0.088	0.089	0.138	0.141	0.141	0.105	0.105	0.104			
10	0.15	0.158	0.148	0.146	0.155	0.157	0.157	0.173			
11	0.168	0.111	0.115	0.115	0.104	0.102	0.102	0.108			
12	0.114	0.108	0.079	0.081	0.082	0	0	0			
13											
14											

12 X 8 = 96 well plate readings

- If you select third option and uploaded file with just 96 readings and missing the sample codes then here is a trick for you to save and organize your file with code.
- First click this well icon to select 96 well plate file and then click upload file. Select same one.
- Now perform the calculation and on the next tab you may see concentrations but no sample codes
- So now come back to project detail tab and select the manual entry radio button and you will find the table filled with both sample code and readings. Now click ok submit and save the file if you wish.
- Again just click on calculate button and your tables with sample code will be updated.
- Here one more safety trick is used to prevent the user enter the characters or string in the some boxes where the number or integers are must so in that case box will be hanged red until you enter in the proper format.

- And anytime you need hint or help just have a look at message box it may give you some suggestions for the next step
- You can reset or restart the project in case if any strange mishap occurs.

For 384 or any $m \times n$ matrix well plates, user has to provide the csv or txt file with the readings sorted sample wise or in manual mode i.e., using first or second options only.

Step 4: Set the Outlier limit

- You can check the outliers if any, by setting the limits in % co-efficient of variation (%CV) between the replicate readings of same sample.
- By default set value is 10 % C.V.
- It will just notify the outlier detection analysis in message box.
- If you want to edit, you can edit the data in file and reupload it or you can continue with calculation.
- Now select the calculation method and proceed further to calculate the unknown concentration.

Step 5: Calculation of Concentration from Standard(s)

- Give the Dilution factor of sample solutions if any dilution performed or else default value of dilution factor is 1 (No extra dilution)
- Give the units of standard and sample concentration to be measured (sample concentrations will be calculated in same unit as of given standard concentrations)

Option 1: from a Single standard by simple cross multiplication

BiAnaCA BioChemical Assay Analyzer and Calculator About Help Demo

HOME NEW PROJECT

Project Detail Result Data Sheet Analysis Reports Graphical Plots Calbraton curve plots

Project Detail

Name of the assay:

Experiment performed by:

Experiment performed on:

Experimental notes:

Data Upload box

Provide the absorbance data from?

.txt/.csv file upload Manual entry in data sheet

Standard at Start Standard at End

valid CSV / TXT file. (96-well plate data file)

Limit for outliers in replicates (in % C.V.):

Group Patterns

Fill in the details of samples for your assay experiment

Number of groups: + Standard (1 Smp)

Number of sample replicates: + Blank (1 Smp)

Group no.	Group code	No. of samples
1	Control	7
2	Treatment A	7
3	Treatment B	8
4	Treatment A+B	8

Calculation Panel

Calculation method selection:

Single Standard Multiple Standards

Enter the Standard concentration:

Mean Standard absorbance reading:

Dilution factor for sample readings:

Standard/sample concentration units:

Number of points in Std. calibration curve:

Designed and developed by team BiAnaCA, Dept. of Pharmacoinformatics, NIPER, S.A.S.Nagar, India.

Option 2: from multiple standard by Standard curve calibration and regression equation

- Enter the number of sample or points in the calibration curve, click the enter and in the side box that many cells will appear for concentration and corresponding readings
- Fill the data and click the Plot Equation, find the result in message box and graphical plot is generated in the last tab of calibration curve plot, view it.

HOME NEW PROJECT

Project Detail Result Data Sheet Analysis Reports Graphical Plots Calibrator curve plots

Project Detail

Name of the assay:

Experiment performed by:

Experiment performed on:

Experimental notes:

Data Upload box

Provide the absorbance data from?

.txt/.csv file upload
 Manual entry in data sheet

Standard at Start
 Standard at End

valid CSV / TXT file. (96-well plate data file)

Limit for outliers in replicates (in % C.V.):

Group Patterns

Fill in the details of samples for your assay experiment

Number of groups: + Standard (1 Smp)

Number of sample replicates: + Blank (1 Smp)

Group no.	Group code	No. of samples
1	Control	7
2	Treatment A	7
3	Treatment B	8
4	Treatment A+B	8

Thank you. Now enter the readings or data points of standard calibration curve. Then press Plot Equation.

Calculation Panel

Calculation method selection:

Single Standard
 Multiple Standards

Enter the Standard concentration:

Mean Standard absorbance reading:

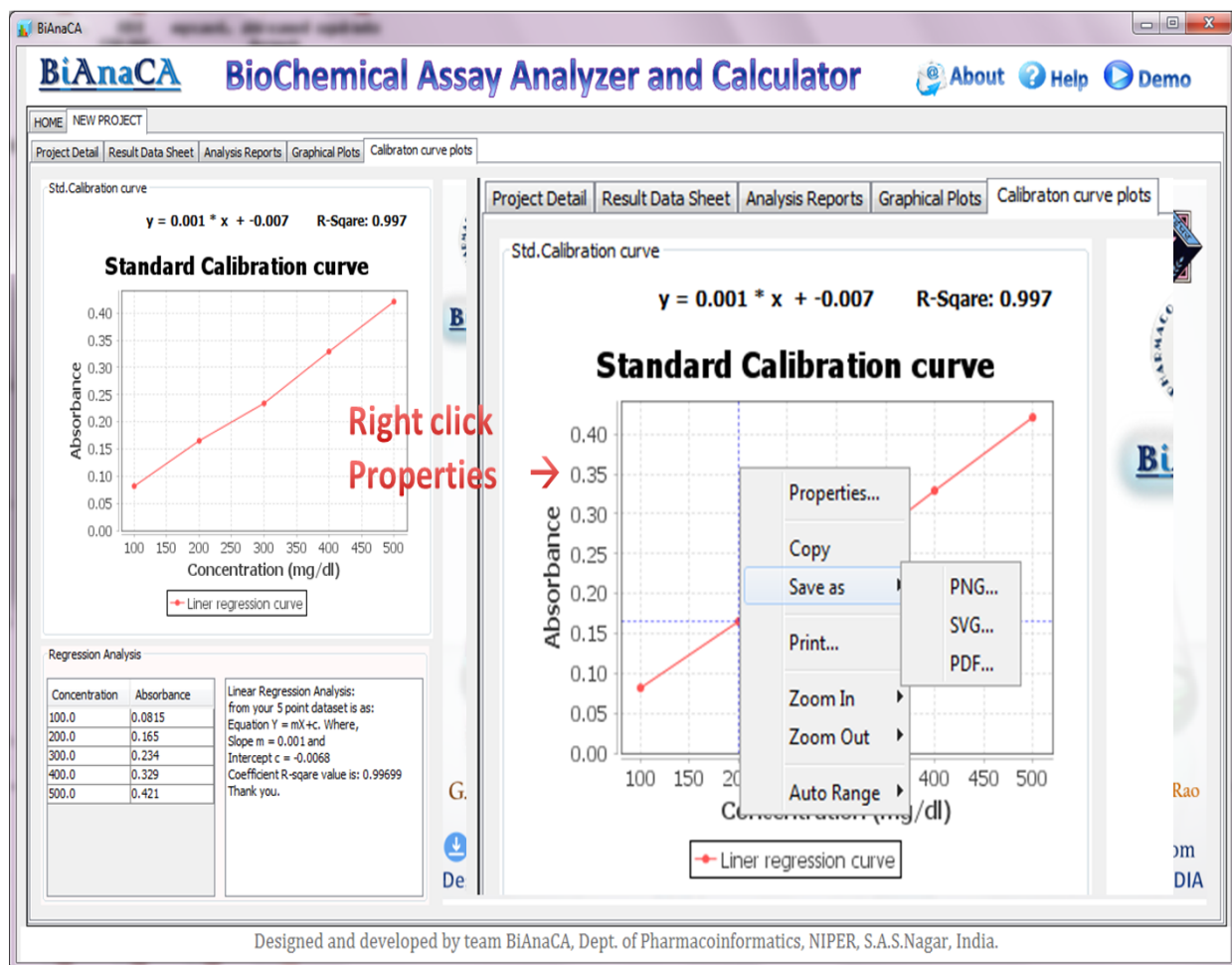
Dilution factor for sample readings:

Standard/sample concentration units:

Number of points in Std. calibration curve:

Concentration	Absorbance
100	0.082
200	0.165
300	0.234
400	0.329
500	0.421

Standard Calibration curve plot



- You can view, edit, print, copy or save the plot in different formats from its properties option by right click on the plot.
- Linear regression equation along with the coefficient of determination (R square) is generated

$$\text{Linear regression equation: } y = mx + c$$

where,

y=absorbance,

m=slope,

x=concentration,

c=intercept

- Come back to Project detail screen and Click on activated calculate button and find the results on the screen in the next tabbed pane.

HOME NEW PROJECT

Project Detail Result Data Sheet Analysis Reports Graphical Plots Calibration curve plots

Project Detail

Name of the assay:

Experiment performed by:

Experiment performed on:

Experimental notes:

Data Upload box

Provide the absorbance data from?

.txt/.csv file upload
 Manual entry in data sheet

Standard at Start
 Standard at End

valid CSV / TXT file. (96-well plate data file)

Limit for outliers in replicates (in % C.V.):

Group Patterns

Fill in the details of samples for your assay experiment

Number of groups: + Standard (1 Smp)

Number of sample replicates: + Blank (1 Smp)

Group no.	Group code	No. of samples
1	Control	7
2	Treatment A	7
3	Treatment B	8
4	Treatment A+B	8

Standard Calibration Curve is as:
Equation $Y = mX + c$. Where,
Slope $m = 0.001$ and Intercept $c = 0.06$
Coefficient R-square value is: 0.9
Now click Calculate for calculation of samples concentration from this equation.

Calculation Panel

Calculation method selection:

Single Standard
 Multiple Standards

Enter the Standard concentration:

Mean Standard absorbance reading:

Dilution factor for sample readings:

Standard/sample concentration units:

Number of points in Std. calibration curve:

Concentration	Absorbance
100	0.082
200	0.165
300	0.234
400	0.329
500	0.421

Step 6: Click “Calculate” button for Result data sheet containing sample wise concentration table

BiAnaCA BioChemical Assay Analyzer and Calculator

HOME | NEW PROJECT

Project Detail | **Result Data Sheet** | Analysis Reports | Graphical Plots | Calibrator curve plots

Sr. no	Sample Code	Reading 1	Reading 2	Reading 3	Mean Abs.	Std. Error	std. dev	% C.V	Concentration	notes
1	CTRL-C-1-H	0.071	0.07	0.072	0.071	0.001	0.001	1.409	92.289	
2	CTRL-C-1-M	0.053	0.056	0.059	0.056	0.002	0.003	5.357	74.496	
3	CTRL-C-1-T	0.056	0.061	0.06	0.06	0.002	0.003	1.404	70.055	
4	CTRL-C-1-HM	0.067	0.071	0.083	0.074	0.005	0.008	11.303	95.453	**Outliers
5	CTRL-C-1-HT	0.055	0.057	0.055	0.056	0.001	0.001	2.074	74.1	
6	CTRL-C-2-H	0.062	0.072	0.063	0.066	0.003	0.005	8.387	85.963	
7	CTRL-C-2-M	0.069	0.082	0.072	0.074	0.004	0.007	9.157	96.244	
8	HSD-S-3-H	0.081	0.083	0.077	0.08	0.002	0.003	3.803	103.361	
9	HSD-S-3-M	0.094	0.099	0.099	0.097	0.002	0.003	2.966	123.527	
10	HSD-S-3-T	0.087	0.093	0.097	0.092	0.003	0.005	5.451	117.596	
11	HSD-S-4-HM	0.09	0.096	0.095	0.094	0.002	0.003	3.432	119.177	
12	HSD-S-4-HT	0.125	0.131	0.123	0.126	0.002	0.004	3.296	157.928	
13	HSD-S-4-H	0.14	0.152	0.149	0.147	0.004	0.006	4.248	182.444	
14	HSD-S-5-M	0.082	0.087	0.092	0.087	0.003	0.005	5.747	111.269	
15	UNX-U-6-M	0.073	0.07	0.072	0.072	0.001	0.002	2.131	93.08	
16	UNX-U-6-T	0.062	0.07	0.062	0.065	0.003	0.005	7.143	84.777	
17	UNX-U-6-HM	0.08	0.091	0.091	0.087	0.004	0.006	7.272	111.665	
18	UNX-U-6-HT	0.094	0.105	0.097	0.099	0.003	0.006	5.763	125.109	
19	UNX-U-6-MT	0.074	0.074	0.069	0.072	0.002	0.003	3.991	93.871	
20	UNX-U-7-H	0.074	0.075	0.073	0.074	0.001	0.001	1.351	95.848	
21	UNX-U-7-M	0.075	0.089	0.083	0.082	0.004	0.007	8.531	105.734	
22	UNX-U-T-T	0.081	0.088	0.089	0.086	0.003	0.004	5.069	110.083	
23	UNX+HSD-US-8-H	0.138	0.141	0.141	0.14	0.001	0.002	1.237	174.14	
24	UNX+HSD-US-8-M	0.105	0.105	0.104	0.105	0	0.001	0.552	132.226	
25	UNX+HSD-US-8-T	0.15	0.158	0.148	0.152	0.003	0.005	3.481	188.375	
26	UNX+HSD-US-9-HM	0.146	0.155	0.157	0.153	0.003	0.006	3.838	189.166	
27	UNX+HSD-US-9-HT	0.157	0.173	0.168	0.166	0.005	0.008	4.931	204.982	
28	UNX+HSD-US-9-MT	0.111	0.115	0.115	0.114	0.001	0.002	2.032	142.902	
29	UNX+HSD-US-10-H	0.104	0.102	0.102	0.103	0.001	0.001	1.125	129.854	
30	UNX+HSD-US-10-T	0.108	0.114	0.108	0.11	0.002	0.004	3.149	138.553	
31	STD	0.079	0.081	0.082	0.081	0.001	0.002	1.894	103.756	

This is the result data for sample wise analysis. Now, To Perform the Next group wise data Analysis Click on Data Analysis, or to change click on Home to go back . **Data Analysis:** next

Designed and developed by team BiAnaCA, Dept. of Pharmacoinformatics, NIPER, S.A.S.Nagar, India.

Step 7: Upon clicking “next”, “Analysis Reports” tab will be opened

Analysis reports include Group-wise concentration data and Column statistics.

BiAnaCA BioChemical Assay Analyzer and Calculator

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Project Detail | Result Data Sheet | Analysis Reports | Graphical Plots | Calibrator curve plots

Group Cont Data

Grp1: Control	Grp2: Treatment A	Grp3: Treatment B	Grp4: Treatment A+B
710.0	803.3333	716.6667	1400.0
560.0	973.3333	646.6667	1046.6667
590.0	923.3333	873.3333	1520.0
736.6667	936.6667	986.6667	1526.6667
556.6667	1263.3333	723.3333	1660.0
656.6667	1470.0	740.0	1136.6667
743.3333	870.0	823.3333	1026.6667
		860.0	1100.0

Group wise statistics (Column Statistics)

Parameter	Grp 1: Control	Grp 2: Treatment A	Grp 3: Treatment B	Grp 4: Treatment A+B
Sample size	7	7	8	8
Mean	650.476	1034.286	796.25	1302.083
Std. Error	30.967	91.051	38.773	89.134
Std. deviation	81.931	240.899	109.667	252.108
Var. Ratio	6712.698	58032.275	12026.786	63558.532
%C.V.	12.596	23.291	13.773	19.362
Minimum	556.667	803.333	646.667	1026.667
Q1 quartile	560.0	870.0	718.333	1060.0
Q3 quartile	656.667	936.667	781.667	1268.333
Median	736.667	1263.333	870.0	1525.0
Maximum	743.333	1470.0	986.667	1660.0

Statistical Test Parameters

Select your test

First select the groups and then perform test.

Alpha value (α): 0.05 (95% C.I.)

P value: One-tail Two-tail

Analysis report box

t-test results

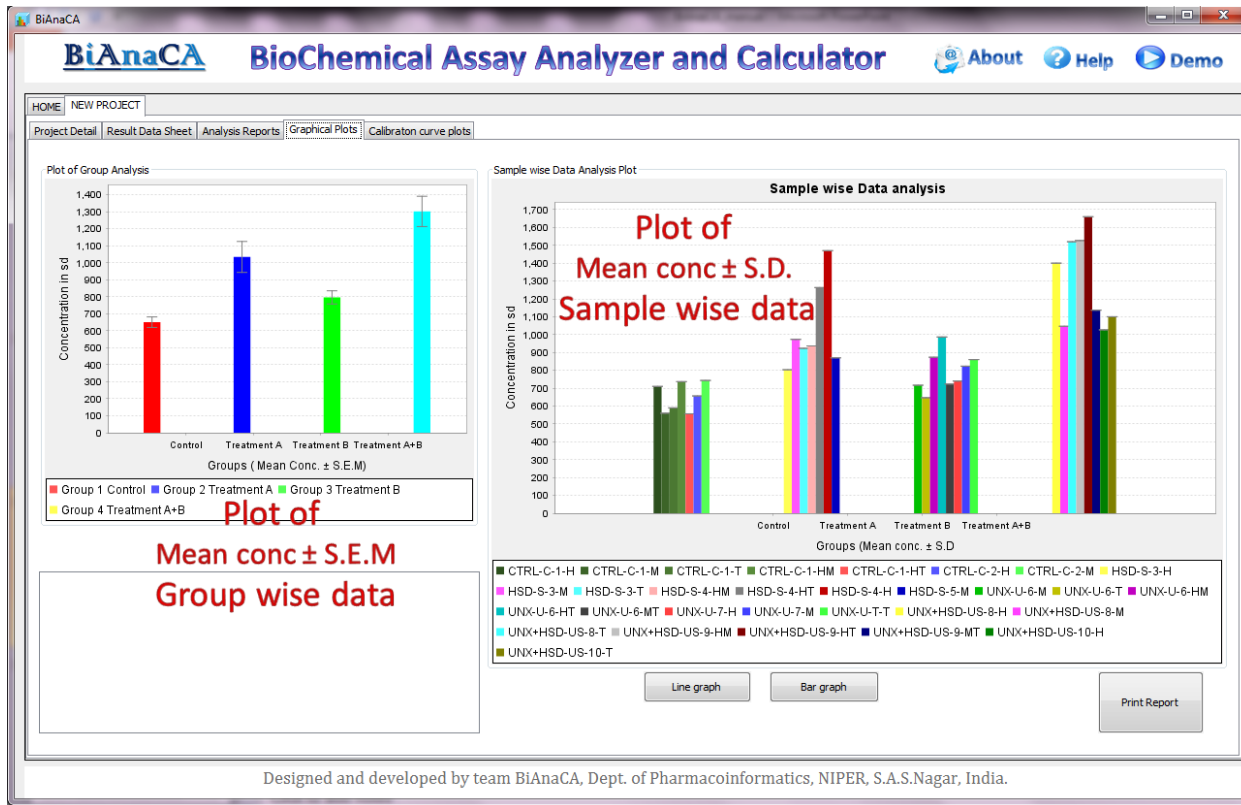
Parameter	Value	Parameter	Value
Group	Group 2		
Sample size	Sample size		
Mean \pm S.E.M	Mean \pm S.E.M		
One-/Two- tail	Alpha value		
P value	P value summary		
t-statistic	Null Ho rejection?		

Concentration Group wise data

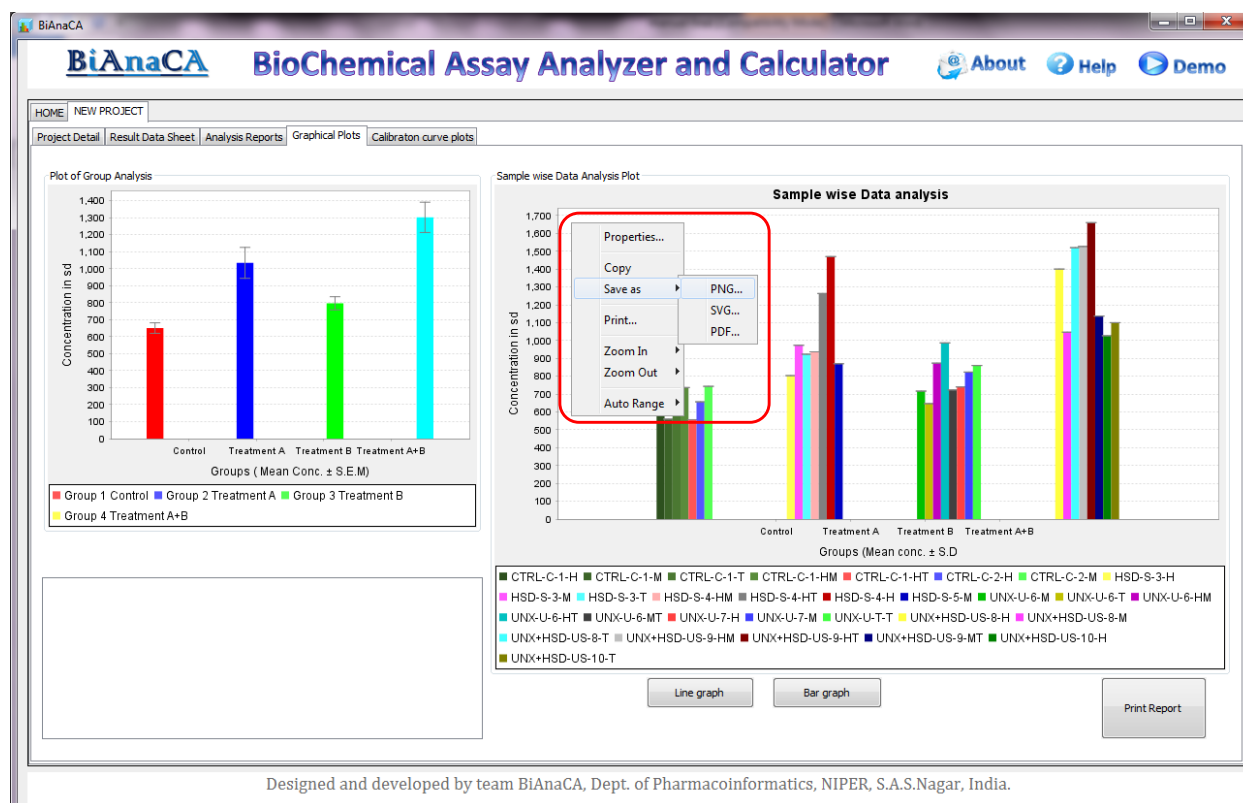
Statistical Parameters Group wise data

Designed and developed by team BiAnaCA, Dept. of Pharmacoinformatics, NIPER, S.A.S.Nagar, India.

Step 8: Click “Plot graph” for graphs of Group-wise and Sample-wise data



Right click on the graph and explore the properties, edit, view or save graphs



Step 9: Perform Statistical tests

- Select your test first:
 - Unpaired Student's t-test (for equal variance)
 - Paired Student's t-test
 - Unpaired t-test (unequal variance) (Welch correction)
 - One-sample Student's t-test
 - One-way ANOVA
 - Z-factor
- Select alpha value from List
 - 0.05 (95% Confidence interval)
 - 0.01 (99% Confidence interval)
 - 0.001 (99.9% Confidence interval)
 - 0.1 (90% Confidence interval)
- Select P value
 - One-tail
 - Two-tail

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Group Conc Data

Grp1: Control	Grp2: Treatment A	Grp3: Treatment B	Grp4: Treatment A+B
710.0	803.3333	716.6667	1400.0
560.0	973.3333	646.6667	1046.6667
990.0	923.3333	873.3333	1520.0
736.6667	936.6667	986.6667	1526.6667
556.6667	1263.3333	723.3333	1660.0
656.6667	1470.0	740.0	1136.6667
743.3333	870.0	823.3333	1026.6667
		860.0	1100.0

Group wise statistics (Column Statistics) Plot graph

Parameter	Grp 1: Control	Grp 2: Treatment A	Grp 3: Treatment B	Grp 4: Treatment A+B
Sample size	7	7	8	8
Mean	650.476	1034.286	796.25	1302.083
Std. Error	30.967	91.051	38.773	89.134
Std. deviation	81.931	240.899	109.667	252.108
Var. Ratio	6712.698	58032.275	12026.786	63558.532
%C.V.	12.596	23.291	13.773	19.362
Minimum	556.667	803.333	646.667	1026.667
Q1 quartile	560.0	870.0	718.333	1060.0
Q3 quartile	656.667	936.667	781.667	1268.333
Median	736.667	1263.333	870.0	1525.0
Maximum	743.333	1470.0	986.667	1660.0

Statistical Test Parameters

Select your test

- Select your test
- Unpaired Student's t-test (equal variance)
- Paired Student's t-test
- Unpaired Student's t-test (unequal variance) (Welch correction)
- One-sample Student's t-test
- One-way ANOVA
- Z-factor

Group 2 Alpha value (α): 0.05 (95% C.I.)

Group 3

Group 4

Group 5

P value: One-tail Two-tail

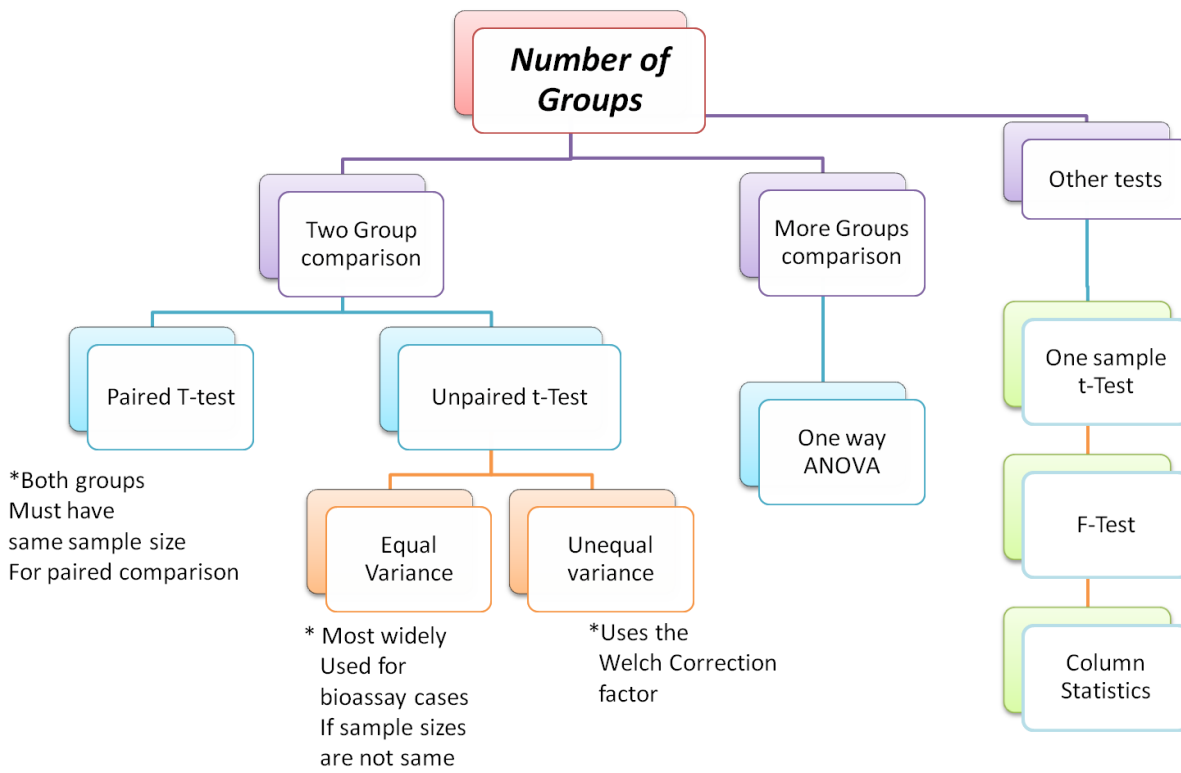
Analysis report box

t-test results

Parameter	Value	Parameter	Value
Group 1		Group 2	
Sample size		Sample size	
Mean ± S.E.M		Mean ± S.E.M	
One-/Two- tail		Alpha value	
P value		P value summary	
t-statistic		Null Ho rejection?	
Deg. of freedom		Test Name	

Designed and developed by team BiAnaCA, Dept. of Pharmacoinformatics, NIPER, S.A.S.Nagar, India.

Selection of Statistical Tests



(i) To perform Student's t-test or other t-tests, select two groups, alpha value, one or two tail and click "Perform"

Group Conc Data

Grp1: Control	Grp2: Treatment A	Grp3: Treatment B	Grp4: Treatment A+B
710.0	803.3333	716.6667	1400.0
560.0	973.3333	646.6667	1046.6667
590.0	923.3333	873.3333	1520.0
736.6667	936.6667	986.6667	1526.6667
556.6667	1263.3333	723.3333	1660.0
656.6667	1470.0	740.0	1136.6667
743.3333	870.0	823.3333	1026.6667
		860.0	1100.0

Group wise statistics (Column Statistics)

Parameter	Grp 1: Control	Grp 2: Treatment A	Grp 3: Treatment B	Grp 4: Treatment A+B
Sample size	7	7	8	8
Mean	650.476	1034.286	796.25	1302.083
Std. Error	30.967	91.051	38.773	89.134
Std. deviation	81.931	240.899	109.667	252.108
Var. Ratio	6712.698	58032.275	12026.786	63558.532
%C.V.	12.596	23.291	13.773	19.362
Minimum	556.667	803.333	646.667	1026.667
Q1 quartile	560.0	870.0	718.333	1060.0
Q3 quartile	656.667	936.667	781.667	1268.333
Median	736.667	1263.333	870.0	1525.0
Maximum	743.333	1470.0	986.667	1660.0

Statistical Test Parameters

Paired Student's t-test

Select the groups for test:

Select all

First group is control group: 1

Group 1: Control
Group 2: Treatment A
Group 3: Treatment B
Group 4: Treatment A+B

Paired t-test:
Select two groups only they should have same sample size
Select Alpha and P value

Alpha value (α): 0.05 (95% C.I.)

P value: One-tail Two-tail

Analysis report box

t-test results

Parameter	Value	Parameter	Value
Group 1	Control	Group 2	Treatment A
Sample size	7	Sample size	7
Mean \pm S.E.M	650.4762 \pm 30.967	Mean \pm S.E.M	1034.2857 \pm 91.05...
One-/Two- tail	Two Tail	Alpha value	0.05
P value	0.00179	P value summary	**
t-statistic	-3.99082	Null Ho rejection?	can be rejected

Designed and developed by team BiAnaCA, Dept. of Pharmacoinformatics, NIPER, S.A.S.Nagar, India.

In Results table, you can find sample size, mean \pm SEM, P value, T Statistic, Significance, Null Hypothesis rejection, deg. of freedom etc.

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Group Conc Data

Grp1: Control	Grp2: Treatment A	Grp3: Treatment B	Grp4: Treatment A+B
710.0	803.3333	716.6667	1400.0
560.0	973.3333	646.6667	1046.6667
590.0	923.3333	873.3333	1520.0
736.6667	936.6667	986.6667	1526.6667
556.6667	1263.3333	723.3333	1660.0
656.6667	1470.0	740.0	1136.6667
743.3333	870.0	823.3333	1026.6667
		860.0	1100.0

Group wise statistics (Column Statistics) Plot graph

Parameter	Grp 1: Control	Grp 2: Treatment A	Grp 3: Treatment B	Grp 4: Treatment A+B
Sample size	7	7	8	8
Mean	650.476	1034.286	796.25	1302.083
Std. Error	30.967	91.051	38.773	89.134
Std. deviation	81.931	240.899	109.667	252.108
Var. Ratio	6712.698	58032.275	12026.786	63558.532
%C.V.	12.596	23.291	13.773	19.362
Minimum	556.667	803.333	646.667	1026.667
Q1 quartile	560.0	870.0	718.333	1060.0
Q3 quartile	656.667	936.667	781.667	1268.333
Median	736.667	1263.333	870.0	1525.0
Maximum	743.333	1470.0	986.667	1660.0

Statistical Test Parameters

Paired Student's t-test

Select the groups for test:

Select all

First group is control group: 1

Group 1: Control
Group 2: Treatment A
Group 3: Treatment B
Group 4: Treatment A+B

Alpha value (α): 0.05 (95% C.I.)

P value: One-tail Two-tail

Alpha Perform

Analysis report box

t-test results

Parameter	Value	Parameter	Value
Group 1	Control	Group 2	Treatment A
Sample size	7	Sample size	7
Mean \pm S.E.M	650.4762 \pm 30.967	Mean \pm S.E.M	1034.2857 \pm 91.05...
One-/Two- tail	Two Tail	Alpha value	0.05
P value	0.00179	P value summary	**
t-statistic	-3.99082	Null Ho rejection?	can be rejected

Designed and developed by team BiAnaCA, Dept. of Pharmacoinformatics, NIPER, S.A.S.Nagar, India.

(ii) To perform One-way ANOVA, select more than 2 groups, alpha value, one or two tail and click “Perform”.

A pop-up window of ANOVA results appears

Statistical Test Parameters

One-way ANOVA

Select the groups for test:

Select all

First group is control group: 1

Alpha value (α): 0.05 (95% C.I.)

P value: One-tail Two-tail

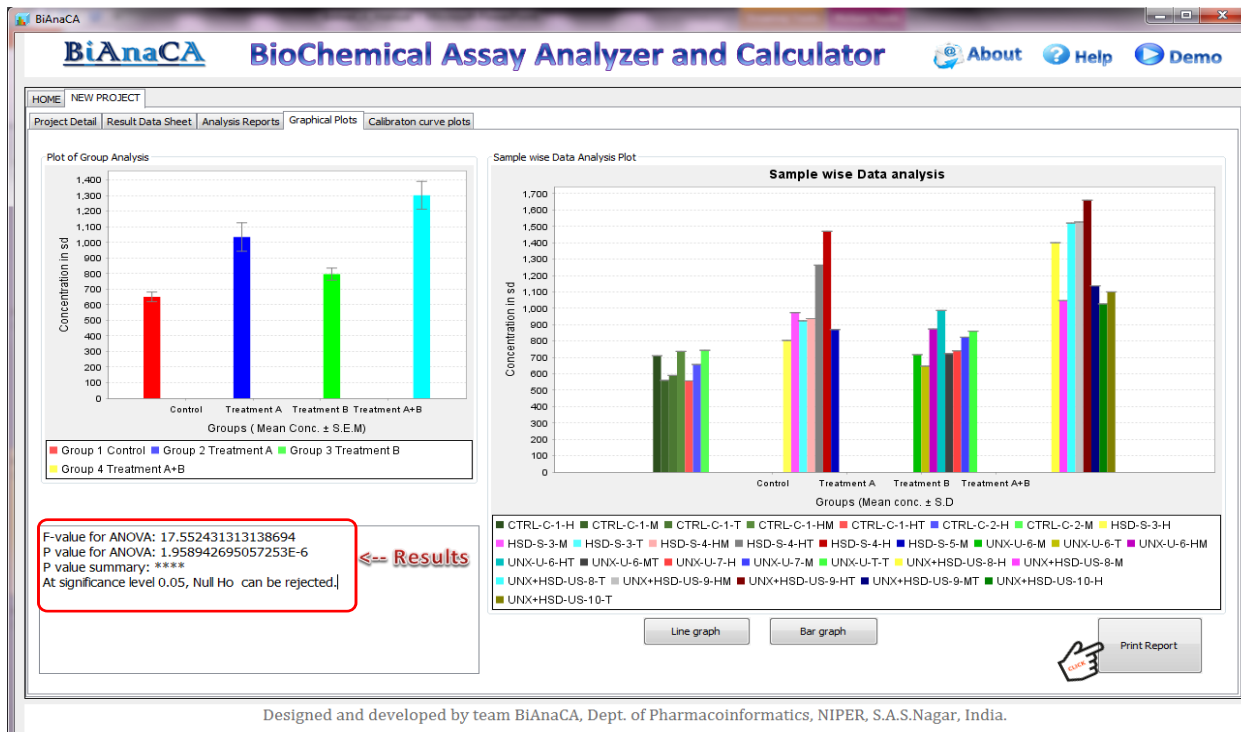
t-test results

Parameter	Value	Parameter	Value
Group 1		Group 2	
Sample size	7	Sample size	7
Mean \pm S.E.M	650.476	Mean \pm S.E.M	1034.286
One-/Two-tail		One-/Two-tail	
P value		P value	
t-statistic	-3.99082	Null Ho rejection?	can be rejected

Message

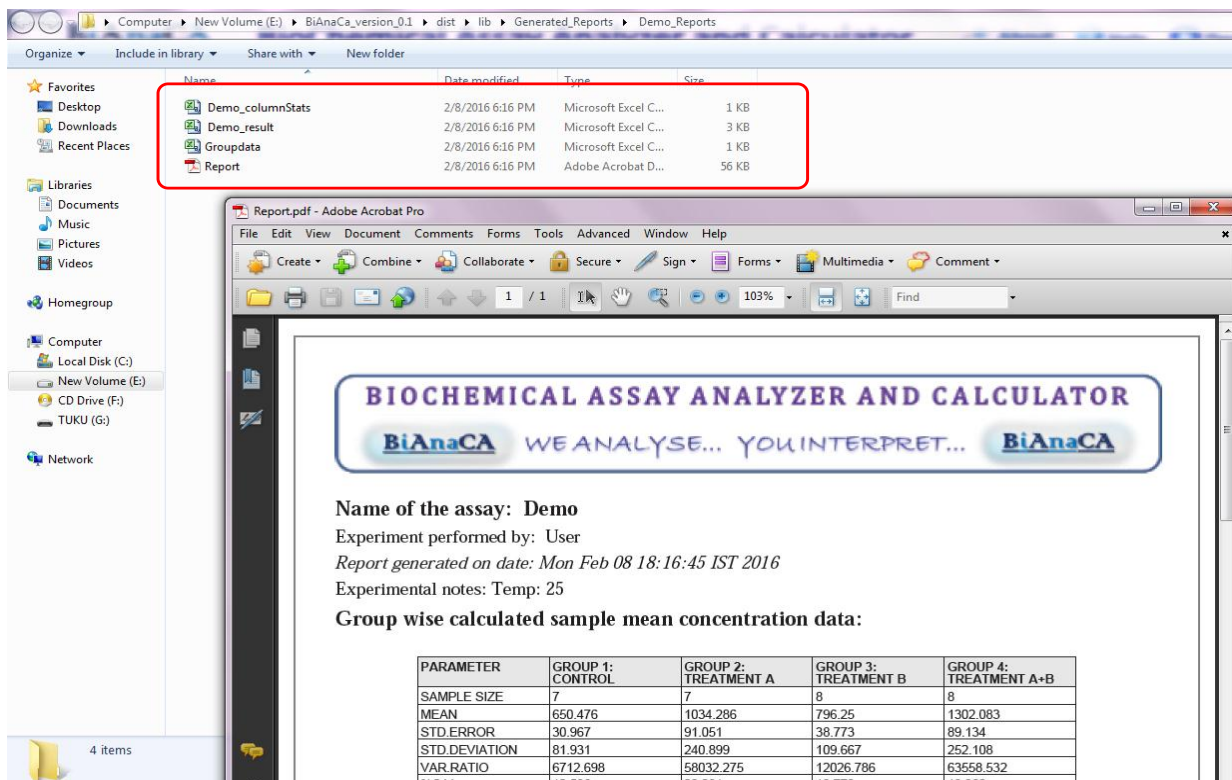
F-value for ANOVA: 17.5524313138694
P value for ANOVA: 1.958942695057253E-6
P value summary: ****
At significance level 0.05, Null Ho can be rejected.

ANOVA results can also be viewed in the “Graphical Plots” tab.

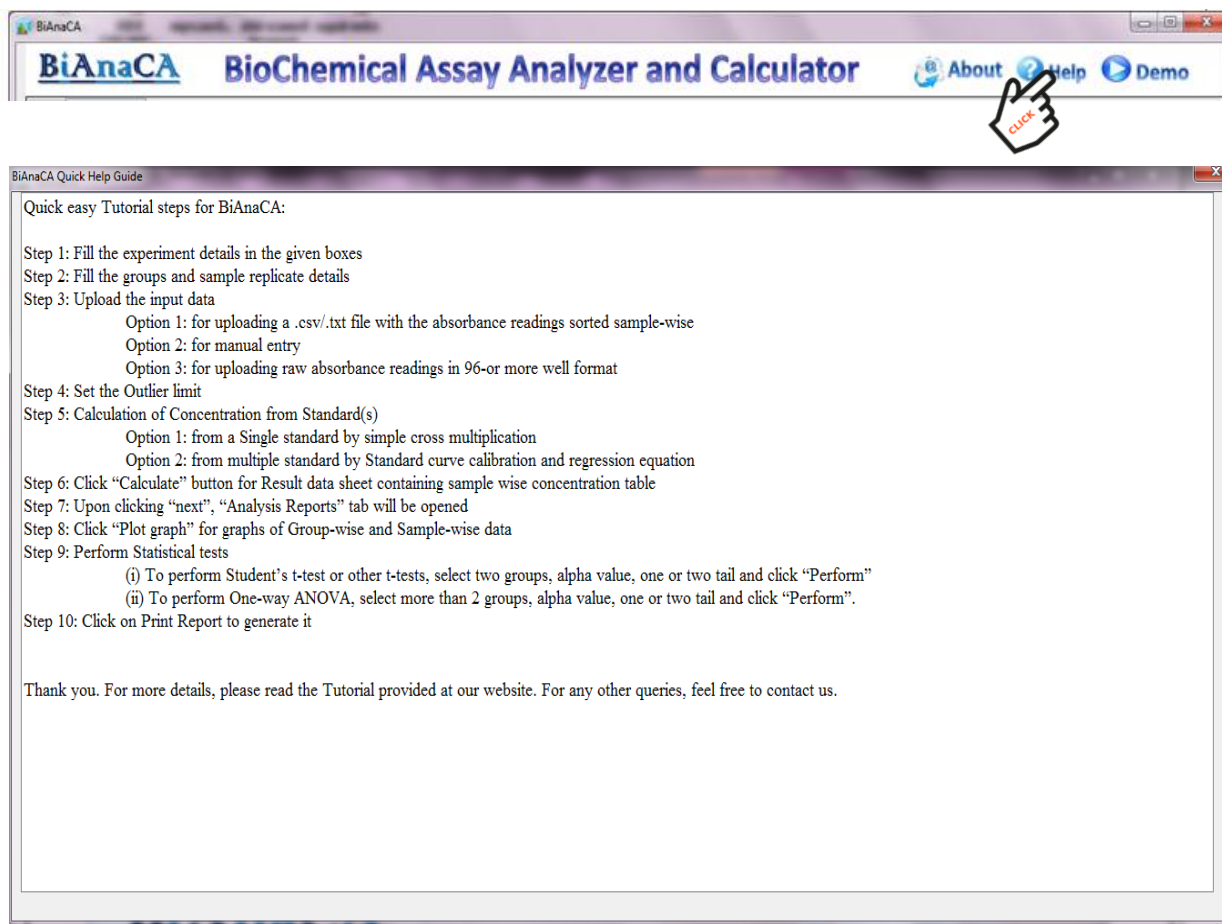


Step 10: Click on Print Report to generate it

Report and Result files are generated in a folder dedicated to project name and it will open up directly on your screen



Summary of Tutorial can be found from “Help” button



Contact Us

For any queries regarding tool, write to:
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venkatkiran_2007@yahoo.co.in



BiAnaCA
We analyze... You Interpret ...



Developed by: Guided by:



T. Abhikumar



Prof. P. V. Bharatam



Prof. Prabha Garg



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J. Gopalakrishna



Mr. Sujit Tangadpallivar



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Designed and Developed by department of Pharmacoinformatics, NIPER, S.A.S. Nagar, INDIA



Dear User,



Thank you



From: Team BiAnaCA
