This README file provides the details necessary to reproduce the results in the publication, "**Randomised clinical trial of long-term glutathione supplementation offers protection from oxidative damage, improves HbA1c in elderly type 2 diabetic patients**". Please follow the instructions given below to execute the attached scripts. For any further queries contact k.marjun@students.iiserpune.ac.in

General Information

This study utilizes the data collected from a pragmatic-prospective clinical trial registered with Clinical Trials Registry-India (CTRI/2018/01/011257) and approved by the Institutional Ethical Committee of Jehangir Hospital Development Center, Pune, Institutional Biosafety Committee of SPPU, Pune, and Institutional Ethical Committee of IISER, Pune, India. Details of data files are described in the next section.

Overview of data files

Data collected from subjects are given in the following Excel sheets.
- **Master_Datasheet_Control.xls**
  This Excel sheet consists of data from Control subjects.

- **Master_Datasheet_Diabetic.xls**
  This Excel sheet consists of data from diabetic (D group) subjects.

- **Master_Datasheet_Diabetic_with_GSH.xls**
  This Excel sheet consists of data from diabetic subjects receiving oral GSH supplements (DG group).

The first column in each of these sheets consists of the subject's ID. Variables measured from each subject at α,β,and γ visits are given in the sheets with the following units:
8-OHdG - ng/µg DNA, Fasting Insulin - µU/ml, Fasting Glucose - mg/dl, PP Glucose - mg/dl, PP Insulin - µU/ml, HbA1c - %, GSH - µM, GSSG - µM, Age - years, Height - cm, Weight- kg, and Sex - Male (M) /Female (F).

All operations to obtain the results use these data files. The next sections will provide the necessary information about executing script files and interpreting desired outputs. The attached scripts have been executed on R version 3.2.3, and Matlab version 2019a.

Running the script files

Download and save the scripts, and data files in a folder in the home directory with the name **"Supporting_Files".**

Inter-group and intra-group comparisons using t-tests and operations executed by the Matlab script file (**matlabscript.m**) are as follows :

- Provide the name of the required figure/table (Table 1, Table S3, Table S4, Figure 2, Figure 3, Figure 4, Figure 5, Figure S1, Figure S2, Figure S3, Figure S4, Figure S5, Figure S6) as the input without spaces in between. For instance, give the input as **FigureS1** to obtain the results in Figure S1 of the article.

- Results will be displayed upon giving the name of the required table/figure as input to the user input prompt in the Matlab command window.

Inter-group and intra-group comparisons in the publication with permutation tests are executed using the R script file **(rscript.R)** as follows :

- Provide the name of the required figure/table values (Table S3, TableS4 Figure 2 or Figure 5) as the input without spaces in between. For instance, give the input as **TableS3** to obtain Table S3 in the article.

- Results will be displayed upon giving the name of the required table/figure as input to the user input prompt in R console.

Steps for executing script files

Follow these steps below to execute permutation tests with an R script.

(1) Install **'Coin',** and **'gdata'** packages in R.

(2) Save the scripts, and data files in the same folder and set it as the working directory.

(3) Run the script file '**rscript.R'** on R console.

(4) Provide the name of a table/figure as input to the prompt in the console, to execute the corresponding permutation tests and obtain the results.

Follow the instructions below to execute t-tests and operations for reproducing results with Matlab script.

(1) Set the folder with data and script files as the Matlab working directory.

(2) Run the script file '**matlabscript.m**' on the command window.

(3) Provide the name of a table/figure as input to the prompt in the command window to execute the operations and obtain the required results.