```r
#--MSC NORMALIZATION FOR MULTIPLE SPECTRA--

# Load necessary libraries
library(readxl)
library(writexl)
library(tidyr)
library(reshape2)
library(dplyr)
library(prospectr)

# Read data from excel file into a data frame
input_data <- read_excel("C:\\Users\\barbi\\Desktop\\input_data.xlsx")

# Changes the data from a data frame to a matrix
input_matrix <- as.matrix(input_data)

# Check for missing and infinite values
sum(is.na(input_matrix))
sum(is.infinite(input_matrix))

# Perform Multivariate (MSC) normalization
corrected_spectrum <- msc(input_matrix)

# Changes the format from a long table to a wide table
corrected_df <- data.frame(wave_number = seq_len(nrow(input_data)), as.data.frame(corrected_spectrum))
corrected_df <- corrected_df[,-1] #eliminates first column

# Eliminate the first column in corrected_df
corrected_df <- corrected_df %>% select(-1)

# Add the first column in input_data as the new first column in corrected_df
corrected_df <- cbind(input_data[,1], corrected_df)

# Change the name of the first column to "wave_number"
names(corrected_df)[1] <- "wave_number"

# Converting "corrected_df" to a data frame again
corrected_df <- data.frame(corrected_df)

# Exports the data frame in a new .xlsx file
write_xlsx(corrected_df, "C:\\Users\\barbi\\Desktop\\msc_corrected.xlsx")

```