**Supplementary Material**

**Core-shell Au@Ag Nanoparticles Synthetized with Polyphenols as**

**Antimicrobial Agents**

Mauro Villalobos-Noriegaa, Ericka Rodríguez-Leóna, César Rodríguez-Beasa, Eduardo Larios-Rodríguezc, Maribel Plascencia-Jatomeab, Aarón Martínez-Higueraa, Heriberto Acuña-Campa and Ramón A. Iñiguez-Palomaresa\*

aPhysics Department, University of Sonora, Rosales and Transversal 83000, Hermosillo, Sonora, México.

bDepartment of Research and Postgraduate in Food, University of Sonora, Rosales and Transversal 83000, Hermosillo, Sonora, México.

cDepartment of Chemical Engineering and Metallurgy, University of Sonora, Rosales and Transversal 83000, Hermosillo, Sonora, México.

dDepartment of Polymers and Materials Research, University of Sonora, Rosales and Transversal 83000, Hermosillo, Sonora, México.

\*Corresponding author: ramonalfonso.iniguez@gmail.com

**Gráfico, Histograma

Descripción generada automáticamente**

**Figure S1** corresponds to *Rumex hymenosepalus* aqueous solution absorption spectrum.

**Imagen en blanco y negro

Descripción generada automáticamente con confianza media**

**Figure S2** STEM images gallery of individual Au@AgNPs. The first column corresponds to Bright Field images and the middle column to HAADF. The last column is shown manipulated images using ImageJ to enhance contrast. We can observe the uniformity of Ag-shell.

Texto

Descripción generada automáticamente

**Figure S3.** AuNPs HRTEM (A), region 1 FFT plot (B), and integrated image from FFT (C). Region 2 FFT plot is shown in (D) and integrated image from FFT with interplanar distances in (E).

Imagen que contiene edificio, medidor, ciudad

Descripción generada automáticamente

**Figure S4.** AgNPs HRTEM (A), FFT plot (B) and, integrated image from FFT with interplanar distances (C).

**Gráfico, Diagrama

Descripción generada automáticamente**

**Figure S5.** *C. albicans* dose-response curve comparative between Ag and Au@AgNPs.

Bacterial growth analysis using a modified Gompertz model and origin 2018 software. The parameters obtained of adjust are a, xc y k, which are related to the following equations:

Growth Rate µ

and Time LagPhase .

***S.aureus* + AuNPs**

***S.aureus* without AuNPs**

**Table S1.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **Parameter** | Mean Value | Standard Deviation |
| **a** | 1.15528 | 0.00734 |
| **Xc** | 289.0 | 0.50 |
| **k** | 0.0090 | 1.3E-4 |
| R^2 ADJUST | 0.9801 |  |

**Table S2.** Physical Parameters of Bacterial Growth obtained with Adjust Parameters

|  |  |  |
| --- | --- | --- |
| **Parameter** | Mean Value | Standard Deviation |
| Growth Rate µ ( |  |  |
| Time LagPhase (*minutes)* | 177.8888 |  |

**Table S3.** ***S.aureus* + 1µg/mL AuNPs**

Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.98751 | 0.00431 |
| **Xc** | 291.599 | 3.17369 |
| **k** | 0.0075 | 2.05E-4 |
| R^2 ADJUST | 0.99153 |  |

**Table S4.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( |  |  |
| Time LagPhase (*minutes)* | 158.2366 |  |

***S.aureus* + 10µg/mL AuNPs**

**Table S5.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.91793 | 0.00471 |
| **Xc** | 315.5396 | 2.72545 |
| **k** | 0.0068 | 1.01252E-4 |
| R^2 ADJUST | 0..98746 |  |

**Table S6.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( |  |  |
| Time LagPhase (*minutes)* | 168.48078 |  |

***S.aureus* + 50µg/mL AuNPs**

**Table S7.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.51 | 0.012 |
| **Xc** | 787.111 | 11.825 |
| **k** | 0.00615 | 3.989E-4 |
| R^2 ADJUST | 0..8844 |  |

**Table S8.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( |  |  |
| Time LagPhase (*minutes)* | 624.50937 |  |

***S.aureus* + AgNPs**

**Table S9.** ***S.aureus* without AgNPs**

Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 1.1122 | 0.00304 |
| **Xc** | 274.6266 | 1.69846 |
| **k** | 0.00904 | 1.77493E-4 |
| R^2 ADJUST | 0.9971 |  |

**Table S10.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( |  |  |
| Time LagPhase (*minutes)* | 164.00716 |  |

***S.aureus* 1µg/mL AgNPs**

**Table S11.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.90218 | 0.00282 |
| **Xc** | 269.47342 | 0.88062 |
| **k** | 0.01016 | 1.0549E-4 |
| R^2 ADJUST | 0.99931 |  |

**Table S12.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( |  |  |
| Time LagPhase (*minutes)* | 171.04822 |  |

***S.aureus* 10µg/mL AgNPs**

**Table S13.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.79089 | 0.01121 |
| **Xc** | 224.28364 | 2.04417 |
| **k** | 0.01616 | 6.61164E-4 |
| R^2 ADJUST | 0.98434 |  |

**Table S14.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( |  |  |
| Time LagPhase (*minutes)* | 162.40245 |  |

***S.aureus* 50µg/mL AgNPs**

**Table S15.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.74 | 0.001 |
| **Xc** | 967.54471 | 6.30715 |
| **k** | 0.00587 | 3.49063E-4 |
| R^2 ADJUST | 0.973 |  |

**Table S16.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( |  |  |
| Time LagPhase (*minutes)* | 797.18696 |  |

***S.aureus* + Au@AgNPs**

***S.aureus* without Au@AgNPs**

**Table S17.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 1.1122 | 0.00304 |
| **Xc** | 274.6266 | 1.69846 |
| **k** | 0.00904 | 1.77493E-4 |
| R^2 ADJUST | 0.9971 |  |

**Table S18.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( |  |  |
| Time LagPhase (*minutes)* | 164.00716 |  |

**S.*aureus* 1µg/mL Au@AgNPs**

**Table S19.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.90551 | 9.2098E-4 |
| **Xc** | 268.4542 | 1.16359 |
| **k** | 0.00926 | 1.20901E-4 |
| R^2 ADJUST | 0.99959 |  |

**Table S20.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.00308 | 4.34117E-5 |
| Time LagPhase (*minutes)* | 160.46284 | 4.8856 |

***S.aureus* 10µg/mL Au@AgNPs**

**Table S21.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.76728 | 0.00446 |
| **Xc** | 283.117 | 2.55475 |
| **k** | 0.00968 | 1.9955E-4 |
| R^2 ADJUST | 0.99754 |  |

**Table S22.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.00273 | 7.22087E-5 |
| Time LagPhase (*minutes)* | 179.81121 | 9.03605 |

***S.aureus* 50µg/mL Au@AgNPs**

**Table S23.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.73517 | 0.01493 |
| **Xc** | 802.288 | 14.5 |
| **k** | 0.00797 | 0.00104 |
| R^2 ADJUST | 0.99428 |  |

**Table S24.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.00216 | 3.25047E-4 |
| Time LagPhase (*minutes)* | 676.81749 | 188.86726 |

***E.coli* + AuNPs**

***E.coli* without AuNPs**

**Table S25.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.83539 | .00546 |
| **Xc** | 284.94644 | 4.2278 |
| **k** | 0.00651 | 2.43998E-4 |
| R^2 ADJUST | 0.98643 |  |

**Table S26.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.002 | 8.80623E-5 |
| Time LagPhase (*minutes)* | 131.33661 | 11.79379 |

***E.coli* + 1µg/mL AuNPs**

**Table S27.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | .75065 | .00531 |
| **Xc** | 275.93547 | 4.77869 |
| **k** | 0.00666 | 2.79881E-4 |
| R^2 ADJUST | 0.98267 |  |

**Table S28.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.00184 | 9.02987E-5 |
| Time LagPhase (*minutes)* | 125.78532 | 12.75042 |

***E.coli* + 10µg/mL AuNPs**

**Table S29.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.76901 | 0.00527 |
| **Xc** | 267.52651 | 4.67208 |
| **k** | 0.00658 | 2.67281E-4 |
| R^2 ADJUST | 0.98318 |  |

**Table S30.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.00186 | 8.83714E-5 |
| Time LagPhase (*minutes)* | 115.55083 | 11.40538 |

***E.coli* + 50µg/mL AuNPs**

**Table S31.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.76171 | 0.00367 |
| **Xc** | 304.8801 | 3.18269 |
| **k** | 0.00644 | 1.77262E-4 |
| R^2 ADJUST | 0.99301 |  |

**Table S32.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.0018 | 5.83667E-5 |
| Time LagPhase (*minutes)* | 149.6006 | 9.79726 |

***E.coli* + 100µg/mL AuNPs**

**Table S33.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.89091 | 0.00462 |
| **Xc** | 299.24812 | 3.447 |
| **k** | 0.00496 | 1.21086E-4 |
| R^2 ADJUST | 0.99318 |  |

**Table S34.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.00163 | 4.81157E-5 |
| Time LagPhase (*minutes)* | 97.63522 | 5.89169 |

***E.coli* + AgNPs**

***E.coli* without AgNPs**

**Table S35.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 1.11606 | 0.00401 |
| **Xc** | 260.85241 | 2.32122 |
| **k** | 0.00795 | 1.90302E-4 |
| R^2 ADJUST | 0.99519 |  |

**Table S36.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.00326 | 8.98612E-5 |
| Time LagPhase (*minutes)* | 135.06625 | 7.66816 |

***E.coli* + 1µg/mL AgNPs**

**Table S37.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.8839 | 0.00112 |
| **Xc** | 251.07818 | 0.84028 |
| **k** | 0.00844 | 7.54709E-5 |
| R^2 ADJUST | 0.99932 |  |

**Table S38.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.00274 | 2.80183E-5 |
| Time LagPhase (*minutes)* | 132.59477 | 2.81509 |

***E.coli* + 10µg/mL AgNPs**

**Table S39.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.88798 | 0.00202 |
| **Xc** | 331.74964 | 1.4728 |
| **k** | .00579 | 6.8597E-5 |
| R^2 ADJUST | 0.99873 |  |

**Table S40.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.00189 | 2.67112E-5 |
| Time LagPhase (*minutes)* | 159.03807 | 4.47445 |

***E.coli* + 50µg/mL AgNPs**

**Table S41.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.24357 | 0.00853 |
| **Xc** | 999.37678 | 8.83407 |
| **k** | 0.00703 | 6.84646E-4 |
| R^2 ADJUST | 0.96459 |  |

**Table S42.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 6.29919E-4 | 8.34075E-5 |
| Time LagPhase (*minutes)* | 857.12927 | 174.52691 |

***E.coli* + 100µg/mL AgNPs**

**Table S43.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.16375 | 0.02129 |
| **Xc** | 1263.27391 | 14.211 |
| **k** | 0.01491 | 7.126E-4 |
| R^2 ADJUST | 0.64714 |  |

**Table S44.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 8.98182E-4 | 1.59705E-4 |
| Time LagPhase (*minutes)* | 1196.20483 | 127.79797 |

***E.coli* + Au@AgNPs**

***E.coli* without Au@AgNPs**

**Table S45.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 1.11762 | .00371 |
| **Xc** | 267.82612 | 2.214 |
| **k** | 0.0077 | 1.68698E-4 |
| R^2 ADJUST | 0.99587 |  |

**Table S46.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.00317 | 7.98693E-5 |
| Time LagPhase (*minutes)* | 137.95599 | 7.18533 |

***E.coli* + 1µg/mL Au@AgNPs**

**Table S47.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.90492 | .00157 |
| **Xc** | 258.17945 | 1.15103 |
| **k** | 0.00812 | 9.64081E-5 |
| R^2 ADJUST | 0.99879 |  |

**Table S48.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.0027 | 3.67843E-5 |
| Time LagPhase (*minutes)* | 135.02674 | 3.80831 |

***E.coli* + 10µg/mL Au@AgNPs**

**Table S49.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.88673 | 0.00207 |
| **Xc** | 432.0806 | 1.3607 |
| **k** | 0.00578 | 6.48403E-5 |
| R^2 ADJUST | 0.99907 |  |

**Table S50.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.00189 | 2.55531E-5 |
| Time LagPhase (*minutes)* | 259.07022 | 6.62838 |

***E.coli* + 50µg/mL Au@AgNPs**

**Table S51.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.48624 | .02697 |
| **Xc** | 1355.71203 | 4.580 |
| **k** | 0.01526 | 9.04012E-4 |
| R^2 ADJUST | 0.98815 |  |

**Table S52.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 0.00273 | 3.13113E-4 |
| Time LagPhase (*minutes)* | 1290.18123 | 157.22091 |

***E.coli* + 100µg/mL Au@AgNPs**

**Table S53.** Adjust parameters of the curve by modified Gompertz Model (Origin 2018 software)

|  |  |  |
| --- | --- | --- |
| **PARAMETER** | MEAN VALUE | STANDARD DEVIATION |
| **a** | 0.03487 | 3.31568E-4 |
| **Xc** | 1721.68697 | 5.0138 |
| **k** | 0.00351 | 2.81594E-5 |
| R^2 ADJUST | 0.99414 |  |

**Table S54.** PHYSICAL PARAMETERS OF BACTERIAL GROWTH OBTAINED WITH ADJUST PARAMETERS

|  |  |  |
| --- | --- | --- |
| PARAMETER | Mean Value | Standard Deviation |
| Growth Rate µ ( | 4.50261E-5 | 7.89367E-7 |
| Time LagPhase (*minutes)* | 1436.78669 | 27.23772 |