**Table 1: Equation of kinetic models used in study**

|  |  |  |
| --- | --- | --- |
| **Sr. No.** | **Model** | **Equation** |
| **1** | Elovich |  |
| **2** | Lagergren pseudo-first-order |  |
| **3** | Lagergren pseudo-second-order |  |

**Table 2: Screening of bacterial isolates for multiple heavy metal tolerance**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Bacteria ID** | **As (III)** | **As (v)** | **Cd** | **Co** | **Cu** | **Cr** | **Pb** | **Hg** | **Ni** | **Zn** |
| MA7 | 200 | 1000 | - | - | - | - | 1000 | - | 50 | - |
| MA8 | 600 | 1000 | - | 50 | 100 | - | - | - | 50 | - |
| MB1 | 400 | 1000 | - | 50 | 100 | - | - | - | 50 | - |
| MB2 | 400 | 900 | - | 50 | 50 | - | 1000 | - | 50 | - |
| NR1 | 400 | 1000 | - | - | 100 | - | - | - | 50 | - |
| NR4 | 500 | 900 | - | - | - | - | 1000 | 100 | 150 | - |
| **NR5** | 400 | 1100 | 100 | 150 | 200 | 100 | 1000 | 100 | 150 | 400 |
| NR6 | 200 | 900 | 100 | 100 | - | - | 1000 | - | 50 | 500 |
| NR8 | 100 | 900 | - | 100 | 100 | - | 1000 | - | 150 | - |
| RD11 | 400 | 500 | - | 50 | 200 | 500 | 1000 | 100 | 150 | 500 |
| MF7 | 400 | 900 | - | 150 | - | 250 | 900 | - | 250 | 150 |
| MF10 | 500 | 900 | - | 100 | 150 | 300 | 900 | - | 100 | 200 |
| BA8 | 500 | 600 | 100 | 100 | - | 120 | 200 | 0 | 100 | - |
| BB3 | 400 | 600 | - | - | - | - | 100 | 0 | 00 | - |
| BB4 | 300 | 600 | 100 | 80 | - | 100 | 200 | 0 | 100 | - |
| BB12 | 400 | 600 | 150 | 100 | - | 150 | 300 | 0 | 150 | - |

\*All the metals provided in mg Kg-1

**Table 3: Effect of arsenic on physiological growth**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Treatment/Parameter** | **Number of leaves** | **Root length (cm)** | **Shoot length (cm)** | **Root fresh weight (gram)** | **Shoot fresh weight (gram)** | **Root dry weight (gm)** | **Shoot dry weight (gm)** |
| **Spinach (45 DAS)** | 3.67 ± 0.2a | 5.33 ± 0.88b | 14.33 ± 1.18b | 0.30 ± 0.06a | 6.17 ± 0.50b | 0.20 ± 0.02b | 2.13 ± 0.58a |
| **Spinach + As25 (45 DAS)** | 3.00±0.00a | 8.33 ± 0.67a | 14.00 ± 1.39b | 0.30 ± 0.01a | 3.37 ± 0.09b | 0.24 ± 0.03b | 0.21 ± 0.02c |
| **Spinach + As25 +NR5 (45 DAS)** | 3.33 ± 0.2a | 7.67 ± 0.67ab | 17.67 ± 0.33a | 0.49 ± 0.08a | 3.93 ± 0.7 4a | 0.31 ± 0.04a | 0.55± 0.05b |
| **Spinach (60 DAS)** | 7.33 ± 0.19a | 6.67 ± 0.67b | 23.33 ± 1.33b | 0.27 ± 0.07a | 7.13 ± 0.90b | 0.23 ± 0.05c | 2.67 ± 0.31a |
| **Spinach + As25 (60 DAS)** | 6.33 ± 0.51a | 9.33 ± 0.33a | 15.00 ± 1.53b | 0.42 ± 0.06a | 3.93 ± 0.24ab | 0.34 ± 0.14b | 2.30 ± 0.44ab |
| **Spinach + As25 +NR5 (60 DAS)** | 7.33 ± 0.51a | 8.00 ± 1.15a | 16.33 ± 1.67a | 0.51 ± 0.12a | 4.67 ± 0.97a | 0.46 ± 0.07a | 2.20 ± 0.36b |
| **Spinach (75 DAS)** | 8.00 ± 1.00a | 8.33 ± 0.67b | 47.33 ± 0.67b | 0.31 ± 0.4b | 10.70 ± 0.90b | 0.27 ± 0.02c | 3.20 ± 0.46a |
| **Spinach + As25 (75 DAS)** | 7.33 ±0.58a | 9.00 ± 1.53a | 32.00 ± 0.58a | 0.51 ± 0.07ab | 5.40 ± 0.87b | 0.38 ± 0.04b | 2.54± 0.14b |
| **Spinach + As25 +NR5 (75 DAS)** | 8.33 ± 1.00a | 11.33 ± 0.67b | 45.67 ± 0.88a | 0.65 ± 0.03a | 4.33 ± 0.32a | 0.55 ± 0.05a | 2.53 ± 0.32b |

**# #Data are mean of three replicates, and different alphabets on values indicate significance at 5% analyzed by Duncan’s multiple range test (DMRT). superscript a,b,c, indicate the significance level.**

**Table 4: Level of biomolecules under at different timer intervals**

|  |  |  |
| --- | --- | --- |
|  | **Chlorophyl (Chl)**  **µg ml** | **Proline (Pro)**  **µmole/g** |
| **Control 45 DAS** | 82.23±3.71a | 20.71±2.49e |
| **Arsenic 45 DAS** | 55.24±0.92ef | 42.94±2.68c |
| **Arsenic+NR5 45 DAS** | 70.41±2.78b | 27.71±1.25d |
| **Control 60 DAS** | 93.55±1.32a | 16.80±1.47f |
| **Arsenic 60 DAS** | 48.59±2.17c | 49.86±2.47d |
| **Arsenic+NR5 60 DAS** | 78.67±5.29bc | 30.47±1.56e |
| **Control 75 DAS** | 99.12±1.07a | 14.32±1.93de |
| **Arsenic 75 DAS** | 77.55±0.62d | 44.32±1.57de |
| **Arsenic+NR5 75 DAS** | 94.01±2.56bc | 24.93±2.03e |

**#Data are mean of three replicates, and different alphabets on values indicate significance at 5% analysed by Duncan’s multiple range test (DMRT). superscript a,b,c, indicate the significance level.**