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Table (1) isolated bacterial genera

|  |  |  |
| --- | --- | --- |
| **Bacterial genera** | **strain** | **Bacterial culture** |
| *Bacillus cereus* | Already registered in the gene bank | Isolated from soil |
| *Bacillus sanna 1* | A new strain registered in the name of the 1st author | م Isolated from soil |
| *Bacillus sanna 2* | A new strain registered in the name of the 1st author | Isolated from soil |
| *Staphylococcus sp.* | A new genes that have not been recorded | Isolated from water |

Table (2) Isolated fungal genera

|  |  |
| --- | --- |
| **Fungal genera** | **strain** |
| *Aspergillus allahabadi* | Already registered in the gene bank |
| *Aspergillus niveus* | Already registered in the gene bank |
| *Aspergillus recurvatus* | Already registered in the gene bank |
| *Aspergillus sp. E30* | Already registered in the gene bank |
| *Aspergillus tubingensis* | Already registered in the gene bank |
| *Pinicellum consobrinum* | Already registered in the gene bank |
| *Penicillium consobrinum SANA-3* | A new strain registered in the name of the 1st author |
| *Fungal sp. SANA-4* | A new strain registered in the name of the 1st author |
| *Fungal sp. SANA-5* | A new strain registered in the name of the 1st author |

Table (3) The diameter of the inhibition in millimeters when cultivating bacteria with zinc metal in the form of zinc sulfate

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Concentrations** **Metals** | **50** | **100** | **200** | **300** | **400** | **500** | **600** | **700** | **800** | **900** | **1000** | **1200** | **1400** | **1600** | **1800** | **2000** |
| ***Bacillus sp.sanna1*** | X | 12 | 12 | 14 | 15 | 15 | 16 | 16 | 18 | 18 | 19 | 20 | 22 | 24 | 25 | 25 |
| ***Bacillus sp.sanna2*** | X | 12 | 13 | 15 | 16 | 16 | 17 | 18 | 18 | 20 | 20 | 21 | 22 | 22 | 24 | 26 |
| ***Bacillus cereus*** | X | 13 | 14 | 16 | 18 | 18 | 18 | 19 | 19 | 19 | 22 | 31 | 32 | 33 | 33 | 34 |
| ***Staphylococcus sp.*** | X | 8 | 10 | 10 | 11 | 12 | 13 | 14 | 13 | 15 | 15 | 16 | 18 | 22 | 22 | 23 |

Table (4) The diameter of the inhibition in millimeters when cultivating bacteria with lead metal in the form of lead (II) nitrate Pb(NO3)2

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Concentrations** **Metals** | **50** | **100** | **200** | **300** | **400** | **500** | **600** | **700** | **800** | **900** | **1000** | **1200** | **1400** | **1600** | **1800** | **2000** |
| ***Bacillus sp.sanna1*** | X | X | X | X | X | X | X | X | X | X | X | X | 11 | 11 | 11 | 12 |
| ***Bacillus sp.sanna2*** | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X | X |
| ***Bacillus cereus*** | X | X | X | X | X | X | X | X | X | X | X | X | X | 12 | 15 | 15 |
| ***Staphylococcus sp.*** | X | X | X | X | X | X | X | X | X | X | X | X | 12 | 14 | 15 | 15 |

Table (5) Diameter of inhibition in mm of antibiotic tablets with bacteria

dark orange color indicates the resistance of bacteria to the antibiotic, while the light pink color indicates medium resistance, and the white color indicates that the bacteria are sensitive to these antibiotics

|  |  |
| --- | --- |
| Antibiotics | Diameter of inhibition zone of bacterial species |
| Antibiotic | code | concentration | ***Staphylococcus sp*** | ***Bacillus sp.sanna2*** | ***Bacillus sp.sanna1*** | ***Bacillus******cereus*** |
| Chloramphenicol | C | 10 mcg | 22 | 16 | 25 | 18 |
| Ciprofloxacin | CIP | 10 mcg | 35 | 22 | 32 | 20 |
| Amikacin | AK | 10 mcg | 14 | 18 | 16 | 20 |
| Tetracycline | TE | 10 mcg | X  | 6 | 14 | 15 |
| Gentamicin | CN | 10 mcg | 18 | 18 | 22 | 20 |
| Azithromycin | AZM | 15 mcg | X  | 22 | 19 | 15 |
| Streptomycin | S | 25 mcg | 18 | 20 | 30 | 25 |
| Amoxicillin | AX | 25 mcg | 11 | x | x | x |
| Metronidazole | MET | 30 mcg | x | x | x | x |
| Vancomycin | VA | 30 mcg | 20 | 10 | 22 | 16 |