Table 1 In vitro activity of linezolid against M. tuberculosis, NTM and Nocardia (MIC, μg/mL).

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Organism** | **N** | **MIC range** | **MIC50** | **MIC90** | **Reference** |  | **Organism** | **N** | **MIC range** | **MIC50** | **MIC90** | **Reference** |
| **M. tuberculosis** | 84 | 0.125-4 | 0.5 | 2 | *(Huang et al., 2008)* |  | Drug-sensitive | 9 | 0.25-0.5 | 0.25 | 0.5 | *(An et al., 2023)* |
| Beijing genotype | 102 |  | 0.5 | 2 | *(Zhang et al., 2014)* |  | Drug-susceptible | 10 | 0.095-0.3 |  |  | *(Guo et al., 2021)* |
| Non-Beijing genotype | 56 |  | 0.25 | 0.5 | *(Zhang et al., 2014)* |  | MDR | 30 | 0.036-0.499 |  |  | *(Guo et al., 2021)* |
| MDR | 45 | 0.125-0.5 | 0.25 | 0.25 | *(Yang et al., 2012)* |  |  | 69 |  | 0.5 | 1 | *(Wang et al., 2022)* |
| XDR | 16 | 0.125-0.5 | 0.25 | 0.25 | *(Yang et al., 2012)* |  |  | 169 | 0.125-> 2 | 0.5 | 1 | *(Singh et al., 2022)* |
| MDR | 15 | 0.063-16 | 0.25 | 4 | *(Zhang et al., 2014)* |  | MDR | 39 | 0.25 to >16 | 0.25 | 0.5 | *(Kazemian et al., 2015)* |
| XDR | 90 | 0.125-32 | 0.5 | 0.5 | *(Pang et al., 2017)* |  | MDR | 35 |  | 0.25 | 0.5 | *(Kardan-Yamchi et al., 2020)* |
| MDR | 120 |  | 0.064 | 1 | *(Zong et al., 2018)* |  | MDR | 54 | 0.125-2 | 0.5 | 1 | *(Aono et al., 2022)* |
| XDR | 120 |  | 0.13 | 0.25 | *(Zong et al., 2018)* |  |  | 420 | ≤0.125 - 1 | 0.5 | 0.5 | *(Yang et al., 2018)* |
|  | 88 | 0.03-2 | 0.12 | 0.5 | *(Zheng et al., 2021)* |  | XDR | 59 | 0.25-2 | 0.5 | 0.5 | *(Ahmed et al., 2013)* |
| MDR | 425 | 0.12-8 |  |  | *(Yao et al., 2021)* |  | Pre-XDR | 43 | 0.25-1 | 0.5 | 0.5 | *(Ahmed et al., 2013)* |
| All | 1452 | 0.06-32 |  |  | *(Guo et al., 2023)* |  |  | 117 | ≤0.125-1 | 0.5 | 1 | *(Alcalá et al., 2003)* |
| MDR | 156 |  | 0.25 | 1 | *(Guo et al., 2023)* |  | MDR | 33 | 0.06-1 | 0.5 | 0.5 | *(Ermertcan et al., 2009)* |
| Pre XDR | 93 |  | 0.5 | 1 | *(Guo et al., 2023)* |  | All | 59 | 0.125-64 | 1 | 32 | *(Sood et al., 2005)* |
| XDR | 27 |  | 1 | 32 | *(Guo et al., 2023)* |  | MDR | 16 | 0.125-64 | 4 | 64 | *(Sood et al., 2005)* |
| Drug-resistant | 39 | 0.125-0.5 | 0.125 | 0.25 | *(An et al., 2023)* |  | Resistant to either INH or RIF | 33 | 0.125-8 | 1 | 1 | *(Sood et al., 2005)* |
| Resistant to INH, RIF | 10 | 0.12-0.5 | 0.5 | 0.5 | *(Tato et al., 2006)* |  | MDR | 153 | ＜0.06-0.5 | 0.25 | 0.25 | *(Cavanaugh et al., 2017)* |
| Resistant to INH | 3 | 0.12-0.5 |  |  | *(Tato et al., 2006)* |  | MDR | 39 |  | 4 | 8 | *(Erturan & Uzun, 2005)* |
|  | 42 | 0.12-0.5 | 0.25 | 0.5 | *(Tato et al., 2006)* |  |  | 22 |  | 0.5 | 1 | *(Shoen et al., 2018)* |
| non-MDR | 34 | 0.06-1 | 0.5 | 0.5 | *(Ermertcan et al., 2009)* |  |  | 67 | 0.25-4 | 1 | 2 | *(Vera-Cabrera et al., 2005)* |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Organism** | **N** | **MIC range** | **MIC50** | **MIC90** | **Reference** |  | **Organism** | **N** | **MIC range** | **MIC50** | **MIC90** | **Reference** |
| **RGM** *M. abscessus* | 21 | 16-64 | 64 | 64 | *(Zhao et al., 2015)* |  | M. abscessus subsp. bolletii | 93 |  | 16 | ＞16 | *(Hunkins et al., 2023)* |
|  | 47 |  | 8 | ＞32 | *(Araj et al., 2019)* |  |  | 25 | 4-＞128 | 8 | 16 | *(Nie et al., 2014)* |
| *M. abscessus complex* | 20 | 2-128 |  | 16 | *(Shen et al., 2018)* |  |  | 1 | 32 |  |  | *(Lee et al., 2017)* |
|  | 35 | 0.5-32 | 16 | 16 | *(Zhang et al., 2022)* |  |  | 5 | 8-＞32 | 32 | ＞32 | *(Tang et al., 2018)* |
|  | 24 |  | 16 | 32 | *(He et al., 2022)* |  | M. abscessus subsp. massiliense | 20 | 0.5-8 | 2 | 4 | *(Zhang et al., 2017)* |
|  | 37 | 1-64 | 16 | 32 | *(Marfil et al., 2022)* |  |  | 21 | 1-32 | 4 | 8 | *(Gao et al., 2023)* |
|  | 65 | 1-32 | 4 | 16 | *(Gao et al., 2023)* |  |  | 38 | 2-＞32 | 32 | ＞32 | *(Lee et al., 2017)* |
| M. abscessus subsp. abscessus | 148 | 1-64 | 8 | 32 | *(Guo et al., 2021)* |  |  | 46 | 0.5-64 | 8 | 32 | *(Guo et al., 2021)* |
|  | 45 | 1-32 | 4 | 8 | *(Nie et al., 2014)* |  |  | 50 | 0.5-16 | 4 | 8 | *(Kim et al., 2021)* |
|  | 20 | 0.5-32 | 2 | 16 | *(Zhang et al., 2017)* |  |  | 18 | 1-16 | 2 | 8 | *(Kim et al., 2021)* |
|  | 44 | 1-16 | 8 | 16 | *(Gao et al., 2023)* |  |  | 12 | 0.5-32 | 8 | 32 | *(Brown-Elliott & Wallace Jr, 2017)* |
|  | 28 | 2-＞32 | ＞32 |  | *(Lee et al., 2017)* |  |  | 10 | 2-16 | 8 | 16 | *(Brown-Elliott et al., 2018)* |
|  | 30 | 2-128 | 16 | 64 | *(Heidarieh et al., 2016)* |  |  | 754 |  | ＞16 | ＞16 | *(Hunkins et al., 2023)* |
|  | 47 |  | 8 | ＞32 | *(Ruth et al., 2020)* |  |  | 82 | 0.5-＞32 | 8 | ＞32 | *(Tang et al., 2018)* |
|  | 47 | 0.5-64 | 4 | 8 | *(Kim et al., 2021)* |  | M. chelonae complex | 17 | 1-32 | 8 | 16 | *(Vera-Cabrera et al., 2006)* |
|  | 12 | 0.25-32 | 1 | 4 | *(Kim et al., 2021)* |  | M. chelonae | 2 | 8-16 |  |  | *(Ruth et al., 2020)* |
|  | 81 | 0.12-128 | 16 | 32 | *(Brown-Elliott & Wallace Jr, 2017)* |  |  | 22 | 2-16 | 8 | 16 | *(Brown-Elliott & Wallace Jr, 2017)* |
|  | 4 | 4-16 | 4 | 16 | *(Senol et al., 2022)* |  |  | 11 | 2-16 | 4 | 8 | *(Zhao et al., 2015)* |
|  | 14 | 8-64 | 64 | 64 | *(Vera-Cabrera et al., 2006)* |  |  | 1 | 4 |  |  | *(Zhang et al., 2022)* |
|  | 33 | 2-32 | 8 | 16 | *(Brown-Elliott et al., 2018)* |  |  | 10 | 2-16 | 8 | 16 | *(Brown-Elliott et al., 2018)* |
|  | 1344 |  | ＞16 | ＞16 | *(Hunkins et al., 2023)* |  |  | 526 |  | 16 | ＞16 | *(Hunkins et al., 2023)* |
|  | 43 | 0.0625＞32 | 8 | ＞32 | *(Tang et al., 2018)* |  |  | 39 | 2-128 | 16 | 64 | *(Heidarieh et al., 2016)* |
|  | 4 | 4-16 | 4 | 16 | *(Senol et al., 2022)* |  |  | 1 | 4 |  |  | *(Zhang et al., 2022)* |
| **Organism** | **N** | **MIC range** | **MIC50** | **MIC90** | **Reference** |  | **Organism** | **N** | **MIC range** | **MIC50** | **MIC90** | **Reference** |
|  | 2 | 8-16 |  |  | *(Araj et al., 2019)* |  |  | 40 | 4-＞128 | 64 | 128 | *(Zhang et al., 2022)* |
| M. fortuitum | 21 | 1-32 | 16 | 32 | *(Zhang et al., 2022)* |  |  | 43 |  | 32 | ＞64 | *(He et al., 2022)* |
|  | 24 | 0.5-8 | 4 | 8 | *(Zhao et al., 2015)* |  |  | 10 | 8-64 | 32 | 64 | *(Brown-Elliott et al., 2018)* |
|  | 53 | 0.0625-64 | 64 | 64 | *(Zheng et al., 2017)* |  |  | 189 | ≤2-＞32 | 32 | 64 | *(Brown-Elliott et al., 2003)* |
|  | 85 | 0.25-64 | 2 | 32 | *(Heidarieh et al., 2016)* |  |  | 100 | 2-128 | 32 | 64 | *(Brown-Elliott & Wallace Jr, 2017)* |
|  | 20 | 1-8 | 2 | 4 | *(Brown-Elliott & Wallace Jr, 2017)* |  | M.intracellulare | 17 | 8-64 | 8 | 16 | *(Zhao et al., 2015)* |
|  | 17 | 8-32 |  | 16 | *(Shen et al., 2018)* |  |  | 19 | 8-＞64 | 32 | 64 | *(Brown-Elliott et al., 2018)* |
|  | 21 | 1-32 | 16 | 32 | *(Zhang et al., 2022)* |  |  | 16 |  | 16 | 32 | *(Litvinov et al., 2018)* |
|  | 2 | 2 |  |  | *(Ruth et al., 2020)* |  |  | 685 |  | 32 | 64 | *(Cho et al., 2018)* |
|  | 1 | 32 |  |  | *(Senol et al., 2022)* |  |  | 16 | ≤0.063-64 | 32 | 64 | *(Kim et al., 2021)* |
|  | 564 |  | 16 | ＞16 | *(Hunkins et al., 2023)* |  |  |  | 16-32 |  |  | *(Araj et al., 2019)* |
|  | 2 | 2 |  |  | *(Araj et al., 2019)* |  |  | 188 | 0.5-32 | 8 | 16 | *(Zhang et al., 2015)* |
| **SGM**  M. avium | 31 | 8-64 | 32 | 32 | *(Zhao et al., 2015)* |  |  | 2 | 16-32 |  |  | *(Ruth et al., 2020)* |
|  | 65 | 0.0625-64 | 0.5 | 4 | *(Zhang et al., 2015)* |  |  | 75 | 4-64 | 32 | ＞64 | *(Huang et al., 2018)* |
|  | 51 |  | 16 | 32 | *(Ruth et al., 2020)* |  |  | 45 | 2-64 | 32 | 64 | *(Kim et al., 2021)* |
|  | 161 |  | 32 | 64 | *(Litvinov et al., 2018)* |  |  | 13 | 1-32 | 4 | 16 | *(Senol et al., 2022)* |
|  | 885 |  | 16 | 64 | *(Cho et al., 2018)* |  | M. gordonae | 2 | 4-16 |  |  | *(Zhang et al., 2022)* |
|  | 12 | 2-64 | 32 | 64 | *(Brown-Elliott et al., 2018)* |  |  | 1 | 0.5 |  |  | *(Senol et al., 2022)* |
|  | 52 | 0.5-＞64 | 64 | 64 | *(Kim et al., 2021)* |  |  | 21 | ≤0.5-16 | ≤2 | 4 | *(Brown-Elliott et al., 2003)* |
|  | 8 | 16-64 | 32 | 64 | *(Huang et al., 2018)* |  | M. kansasii | 26 | 0.5-1 | 1 | 1 | *(Zhao et al., 2015)* |
|  | 6 | 2-32 | 16 | 32 | *(Senol et al., 2022)* |  |  | 31 | 1-64 | 2 | 4 | *(Liu et al., 2021)* |
|  | 10 | 2-64 | 32 | 32 | *(Kim et al., 2021)* |  |  | 18 | 2-64 | 8 | 32 | *(Zhang et al., 2022)* |
| M. avium complex | 13 | 2-32 | 32 | 32 | *(Vera-Cabrera et al., 2006)* |  |  | 112 |  | 4 | 32 | *(Litvinov et al., 2018)* |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Organism** | **N** | **MIC range** | **MIC50** | **MIC90** | **Reference** |  | **Organism** | **N** | **MIC range** | **MIC50** | **MIC90** | **Reference** |
|  | 8 | ≤1-4 | ≤1 | 4 | *(Brown-Elliott et al., 2018)* |  |  | 18 | ≤1-2 | ≤1 | 2 | *(Wang et al., 2022)* |
|  | 19 | ≤0.5-≤2 | ≤2 | ≤2 | *(Brown-Elliott et al., 2003)* |  |  | 21 | 1-4 | 2 | 2 | *(Brown-Elliott & Wallace Jr, 2017)* |
|  | 7 | 0.5-2 | 2 |  | *(Brown-Elliott & Wallace Jr, 2017)* |  |  | 1 | ≤1 |  |  | *(Wei et al., 2021)* |
|  | 18 | 2-64 | 8 | 32 | *(Zhang et al., 2022)* |  |  | 31 | 0.12-2 | 0.5 | 1 | *(Vera-Cabrera et al., 2006)* |
|  | 14 |  | 2 | 2 | *(He et al., 2022)* |  | N. cyriacigeorgica | 2 | 2 |  |  | *(Goodlet et al., 2021)* |
|  | 6 | 0.5-1 | 0.5 | 1 | *(Senol et al., 2022)* |  |  | 27 | 2-4 | 4 | 4 | *(Toyokawa et al., 2021)* |
|  | 40 | 0.125-2 | 0.125 | 1 | *(Heidarieh et al., 2016)* |  |  | 6 | ≤1-16 |  |  | *(Yi et al., 2019)* |
| M. xenopi | 74 |  | 4 | 16 | *(Litvinov et al., 2018)* |  |  | 126 | ≤1-4 | ≤1 | 2 | *(Wang et al., 2022)* |
| M. marinum | 10 | <0.5-16 |  |  | *(Zhang et al., 2022)* |  |  | 29 | 0.25-2 | 2 | 4 | *(Brown-Elliott & Wallace Jr, 2017)* |
|  | 9 | ≤1-2 | 2 | 2 | *(Brown-Elliott et al., 2018)* |  |  | 2 | 0.094-1 |  |  | *(Mazzaferri et al., 2018)* |
|  | 47 | 1-2 | ≤2 | 2 | *(Brown-Elliott et al., 2003)* |  |  | 33 | ≤1-4 | 2 | 2 | *(Wei et al., 2021)* |
|  | 7 | 1-4 | 1 |  | *(Brown-Elliott & Wallace Jr, 2017)* |  |  | 13 | 1-2 |  |  | *(Wei et al., 2017)* |
|  | 10 | <0.125-2 |  |  | *(Zhang et al., 2022)* |  |  | 16 | 2-4 | 2 | 4 | *(Lao et al., 2022)* |
| **Nocardia** N. abscessus | 3 | 0.19-0.25 |  |  | *(Mazzaferri et al., 2018)* |  |  | 25 |  | 2 | 2 | *(Kuo et al., 2022)* |
|  | 5 | ≤1-2 | ≤1 | 2 | *(Wei et al., 2021)* |  | N. farcinica | 7 | 2-4 |  |  | *(Goodlet et al., 2021)* |
|  | 2 | 0.5-2 |  |  | *(Wei et al., 2017)* |  |  | 8 | ≤1-2 |  |  | *(Yi et al., 2019)* |
|  | 1 |  |  |  | *(Harris et al., 2021)* |  |  | 18 |  | 2 | 4 | *(Kuo et al., 2022)* |
| N. abscessus complex | 54 | ≤1-2 | ≤1 | ≤1 | *(Wang et al., 2022)* |  |  | 176 | ≤1-4 | 2 | 2 | *(Wang et al., 2022)* |
|  | 18 | 0.25-4 | 2 | 4 | *(Toyokawa et al., 2021)* |  |  | 17 | 1-4 | 2 | 4 | *(Brown-Elliott & Wallace Jr, 2017)* |
| N. brasiliensis | 13 |  | 2 | 4 | *(Kuo et al., 2022)* |  |  | 3 | 0.064-2 |  |  | *(Mazzaferri et al., 2018)* |
|  | 28 | 1-4 | 2 | 2 | *(Lao et al., 2022)* |  |  | 24 | 2-4 | 2 | 4 | *(Lao et al., 2022)* |
|  | 14 | 4-8 | 4 | 8 | *(Toyokawa et al., 2021)* |  |  | 20 | ≤1-4 | 2 | 4 | *(Wei et al., 2021)* |
|  | 2 | 2-4 |  |  | *(Yi et al., 2019)* |  |  | 36 |  | 2 | 2 | *(Li et al., 2022)* |
| **Organism** | **N** | **MIC range** | **MIC50** | **MIC90** | **Reference** |  | **Organism** | **N** | **MIC range** | **MIC50** | **MIC90** | **Reference** |
|  | 1 | 0.25 |  |  | *(Mazzaferri et al., 2018)* |  |  | 23 | ≤0.25-4 | 2 | 4 | *(Toyokawa et al., 2021)* |
|  | 6 | 1-4 |  |  | *(Wei et al., 2017)* |  | N. veterana | 2 | 1-16 |  |  | *(Lao et al., 2022)* |
| N. nova | 1 | ≤1 |  |  | *(Yi et al., 2019)* |  | N. otitidiscaviarium | 2 | ≤1-2 |  |  | *(Yi et al., 2019)* |
|  | 6 | 2 | 2 | 2 | *(Lao et al., 2022)* |  |  | 11 | 1-8 | 4 | 4 | *(Toyokawa et al., 2021)* |
|  | 1 | ≤1 |  |  | *(Wei et al., 2021)* |  |  | 26 | ≤1-2 | ≤1 | 2 | *(Wang et al., 2022)* |
|  | 1 | 2 |  |  | *(Wei et al., 2017)* |  |  | 7 | ≤1-4 | ≤1 | 4 | *(Wei et al., 2021)* |
| N. nova complex | 11 | ≤1-2 | ≤1 | 2 | *(Wang et al., 2022)* |  |  | 4 | 2-4 | 2 | 4 | *(Lao et al., 2022)* |
|  | 13 | 0.25-2 | 1 | 2 | *(Brown-Elliott & Wallace Jr, 2017)* |  |  | 1 | 0.5 |  |  | *(Wei et al., 2017)* |

Abbreviations: N, number of strains; MIC, minimum inhibitory concentration; MDR, multidrug-resistant; XDR, extensively drug-resistant. MIC90, minimum inhibitory concentration required to inhibit growth of 90% of isolates；MIC50, minimum inhibitory concentration required to inhibit growth of 50% of isolates；

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