

**“Supporting Information”****Title**

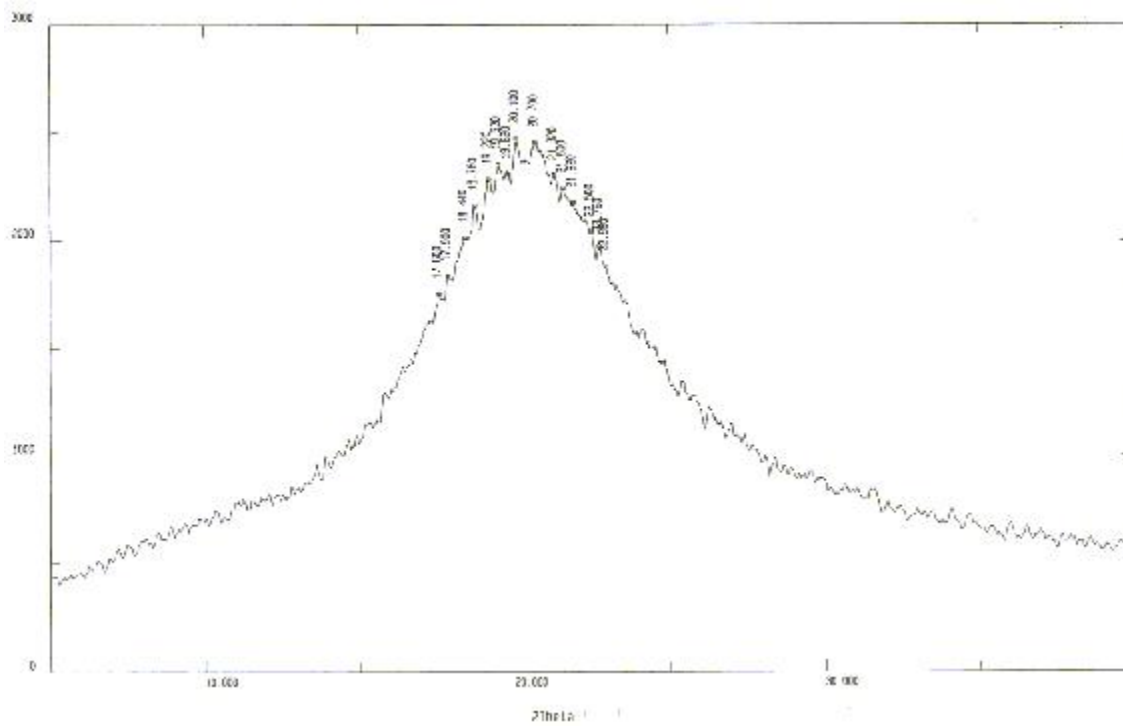
**A Chiral Benzoquinolizine-2-carboxylic acid Arginine Salt Active Against Vancomycin Resistant *Staphylococcus aureus* (VRSA)**

**Authors**

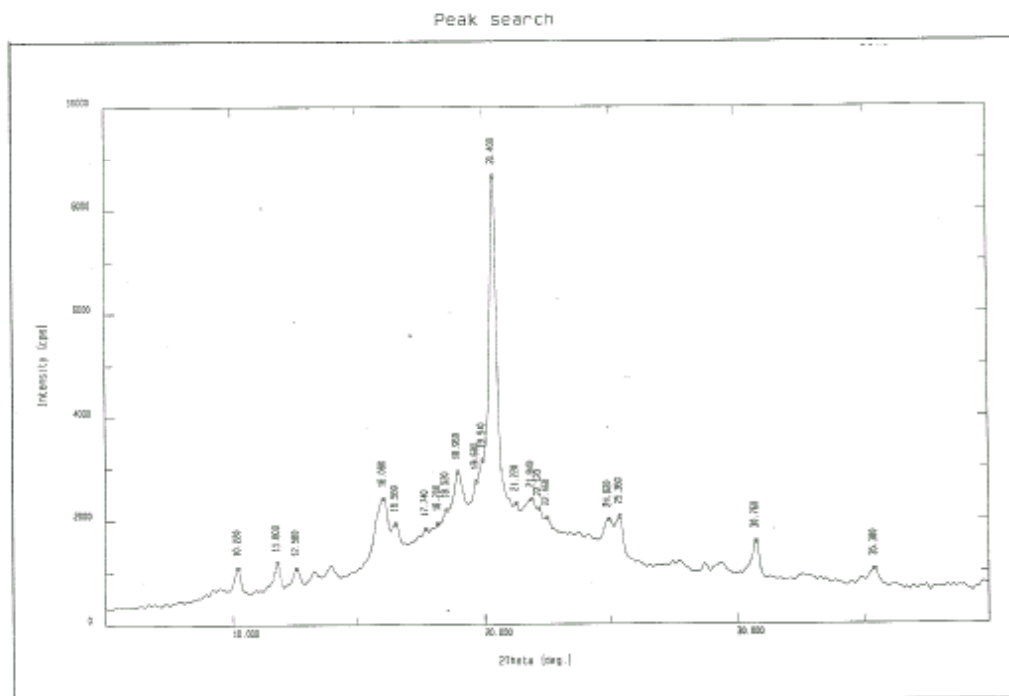
Noel J. de Souza, Shrikant V. Gupte, Prasad K. Deshpande, Vijaya N. Desai, Satish B. Bhawsar, Ravindra D. Yeole, Milind C. Shukla, Jacob Strahilevitz<sup>γ</sup>, David C. Hooper<sup>γ</sup>, Bülent Bozdogan<sup>#</sup>, Peter C Appelbaum<sup>#</sup>, Michael R Jacobs<sup>§</sup>, Nitin Shetty, Mahesh V. Patel\*, Rasendrakumar Jha, Habil F. Khorakiwala.

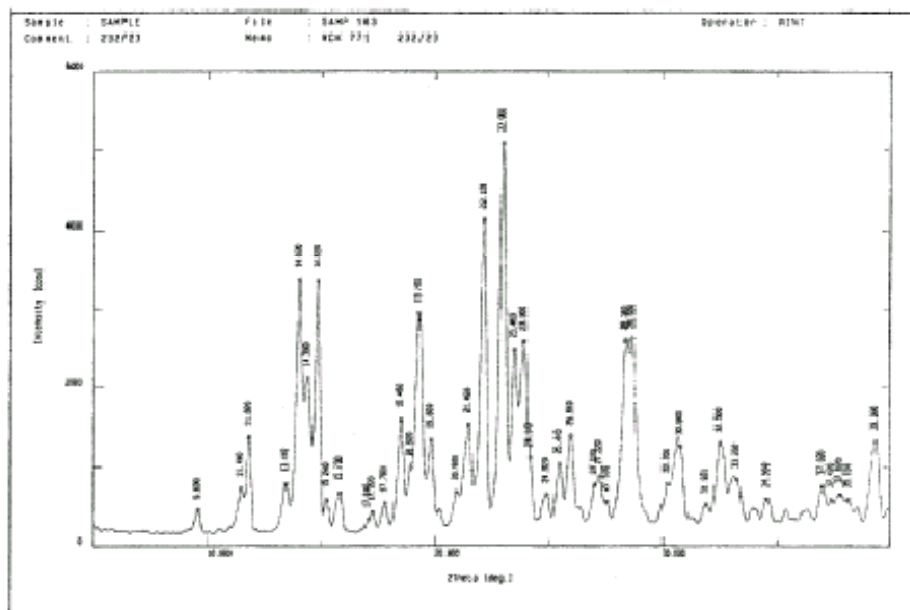
**Table of Contents**

| <b>Content</b>                     | <b>Page No.</b> |
|------------------------------------|-----------------|
| XRPD of Compound <b>19</b>         | S-2             |
| XRPD of Compound <b>20</b>         | S-3             |
| XRPD of Compound <b>21</b>         | S-4             |
| HPLC purity analysis data          | S-5             |
| HR-MS data                         | S-6             |
| Appendix – Elemental analysis data | S-7             |

XRPD spectrum of compound **19**

## XRPD spectrum of compound 20



XRPD spectrum of compound **21**

**Supporting Table 1: HPLC Purity Analysis Data Using Two Diverse Systems**

| Compound | Method A <sup>a</sup> | Method B <sup>b</sup> |                             |  |
|----------|-----------------------|-----------------------|-----------------------------|--|
|          | Purity %              | Purity %              | HPLC column                 | Mobile phase and flow rate   |
| 2        | 99.04                 | 98.79                 | Zorbax SB-18, 250x4.6mm     | 0.05% TFA : CH <sub>3</sub> CN (60:40), 1ml/min                                    |
| 3        | 95.0                  | 96.62                 | YMC Pack ODS-AM, 150x4.6mm  | 0.05% TFA : CH <sub>3</sub> CN : CH <sub>3</sub> OH, (65:5:30), 1ml/min            |
| 4        | 97.4                  | 94.45                 | YMC Pack CN, 250x4.6mm      | 0.05% TFA : CH <sub>3</sub> CN : CH <sub>3</sub> OH, (75:20:5), 1ml/min            |
| 5        | 98.33                 | 98.95                 | YMC Pack CN, 250x4.6mm      | Buffer <sup>c</sup> : CH <sub>3</sub> CN, (80:20), 1ml/min                         |
| 6        | 95.34                 | 99.3                  | YMC Pack CN, 250x4.6mm      | Buffer <sup>c</sup> : CH <sub>3</sub> CN, (80:20), 1ml/min                         |
| 7        | 96.94                 | 95.49                 | YMC Pack ODS-AM, 250x4.6mm  | Buffer <sup>c</sup> : CH <sub>3</sub> CN : CH <sub>3</sub> OH, (60.20.20), 1ml/min |
| 8        | 95.7                  | 95.26                 | Altima CN, 250x4.6mm        | 0.05% TFA : CH <sub>3</sub> CN (75:25), 1ml/min                                    |
| 9        | 98.92                 | 98.2                  | YMC Pack ODS-AM, 250x4.6mm  | 50mM ammonium acetate : CH <sub>3</sub> CN, (60:40), 1ml/min                       |
| 10       | 99.69                 | 98.75                 | Altima CN, 250x4.6mm        | 0.05% TFA : CH <sub>3</sub> CN (60:40), 1.3ml/min                                  |
| 11       | 97.9                  | 97.1                  | YMC Pack ODS-AM, 250x4.6mm, | 0.05% TFA : CH <sub>3</sub> CN (70:30), 1ml/min                                    |
| 13       | 97.00                 | 98.29                 | YMC Pack ODS-AM, 250x4.6mm, | 0.05% TFA : CH <sub>3</sub> CN (72:28), 1.25ml/min                                 |
| 14       | 95.85                 | 95.13                 | YMC Pack ODS-AM, 250x4.6mm  | 50mM ammonium acetate : CH <sub>3</sub> CN, (72:28), 1.1ml/min                     |
| 15       | 99.34                 | 97.83                 | Altima CN, 250x4.6mm        | 0.05% TFA : CH <sub>3</sub> CN (60:40), 1.3ml/min                                  |

<sup>a</sup> HPLC Shimadzu or HP-1100 (YMC Pack ODS-AM, 250x4.6mm, 5 $\mu$ m, mobile phase used A: 0.05% TFA in water, B: acetonitrile, in gradient mode, 0-3min. 10%B; 3-23min. 10%- 90%B; 23-26min. 90%B, flow rate 1.25ml/min, detection at 254nm).

<sup>b</sup> All HPLC columns made of 5 $\mu$ m particles, detection at 254nm.

<sup>c</sup> 50mM sodium dihydrogen phosphate, 10mM heptane sulphonic acid sodium salt in water, pH adjusted to 3.5 with orthophosphoric acid

**Supporting Table 2: HRMS<sup>a</sup> Data**

| <b>Compound</b> | <b>Calculated monoisotopic mass (M+H)</b> | <b>Molecular formula (M+H)</b>                                  | <b>Observed monoisotopic mass (M+H)</b> | <b>Elemental composition obtained from HR-MS</b>                |
|-----------------|---|---|---|---|
| <b>2</b>        | 375.1720                                  | C <sub>20</sub> H <sub>24</sub> FN <sub>2</sub> O <sub>4</sub>  | 375.1718                                | C <sub>20</sub> H <sub>24</sub> FN <sub>2</sub> O <sub>4</sub>  |
| <b>3</b>        | 433.1775                                  | C <sub>22</sub> H <sub>26</sub> FN <sub>2</sub> O <sub>6</sub>  | 433.1773                                | C <sub>22</sub> H <sub>26</sub> FN <sub>2</sub> O <sub>6</sub>  |
| <b>4</b>        | 447.1931                                  | C <sub>23</sub> H <sub>28</sub> FN <sub>2</sub> O <sub>6</sub>  | 447.1937                                | C <sub>23</sub> H <sub>28</sub> FN <sub>2</sub> O <sub>6</sub>  |
| <b>5</b>        | 458.2455                                  | C <sub>25</sub> H <sub>33</sub> FN <sub>3</sub> O <sub>4</sub>  | 458.2470                                | C <sub>25</sub> H <sub>33</sub> FN <sub>3</sub> O <sub>4</sub>  |
| <b>6</b>        | 472.2612                                  | C <sub>26</sub> H <sub>35</sub> FN <sub>3</sub> O <sub>4</sub>  | 472.2596                                | C <sub>26</sub> H <sub>35</sub> FN <sub>3</sub> O <sub>4</sub>  |
| <b>7</b>        | 473.2622                                  | C <sub>25</sub> H <sub>34</sub> FN <sub>3</sub> O <sub>4</sub>  | 473.2564                                | C <sub>25</sub> H <sub>34</sub> FN <sub>3</sub> O <sub>4</sub>  |
| <b>8</b>        | 474.2404                                  | C <sub>25</sub> H <sub>33</sub> FN <sub>3</sub> O <sub>5</sub>  | 474.2403                                | C <sub>25</sub> H <sub>33</sub> FN <sub>3</sub> O <sub>5</sub>  |
| <b>9</b>        | 458.2455                                  | C <sub>25</sub> H <sub>33</sub> FN <sub>3</sub> O <sub>4</sub>  | 458.2417                                | C <sub>25</sub> H <sub>33</sub> FN <sub>3</sub> O <sub>4</sub>  |
| <b>10</b>       | 445.2139                                  | C <sub>24</sub> H <sub>30</sub> FN <sub>2</sub> O <sub>5</sub>  | 445.2182                                | C <sub>24</sub> H <sub>30</sub> FN <sub>2</sub> O <sub>5</sub>  |
| <b>11</b>       | 517.2575                                  | C <sub>25</sub> H <sub>34</sub> FN <sub>6</sub> O <sub>5</sub>  | 517.2667                                | C <sub>25</sub> H <sub>34</sub> FN <sub>6</sub> O <sub>5</sub>  |
| <b>12</b>       | 562.2426                                  | C <sub>25</sub> H <sub>33</sub> FN <sub>7</sub> O <sub>7</sub>  | 562.2389                                | C <sub>25</sub> H <sub>33</sub> FN <sub>7</sub> O <sub>7</sub>  |
| <b>14</b>       | 565.2256                                  | C <sub>27</sub> H <sub>34</sub> FN <sub>2</sub> O <sub>10</sub> | 565.2197                                | C <sub>27</sub> H <sub>34</sub> FN <sub>2</sub> O <sub>10</sub> |
| <b>15</b>       | 559.2820                                  | C <sub>30</sub> H <sub>40</sub> FN <sub>2</sub> O <sub>7</sub>  | 559.2853                                | C <sub>30</sub> H <sub>40</sub> FN <sub>2</sub> O <sub>7</sub>  |

<sup>a</sup> HRMS data was obtained on Q-ToF micro (Micromass UK limited) using electrospray ionization.

**Appendix : Elemental Analysis Data**

| <b>Compound</b> | <b>Molecular formula</b>         | <b>Calculated %</b>      | <b>Found %</b>           |
|-----------------|----------------------------------|--------------------------|--------------------------|
| <b>2</b>        | $C_{20}H_{23}FN_2O_4$            | C 64.16, H 6.19, N 7.48  | C 64.32, H 6.06, N 7.35  |
| <b>3</b>        | $C_{22}H_{25}FN_2O_6 \cdot H_2O$ | C 59.48, H 6.25, N 6.03  | C 59.95, H 6.53, N 6.62  |
| <b>4</b>        | $C_{23}H_{27}FN_2O_6$            | C 61.87, H 6.10, N 6.27  | C 61.31, H 6.49, N 6.11  |
| <b>8</b>        | $C_{25}H_{32}FN_3O_5$            | C 63.41, H 6.81, N 8.87  | C 63.21, H 6.36, N 8.45  |
| <b>9</b>        | $C_{25}H_{32}FN_3O_4$            | C 65.63, H 7.05, N 9.18  | C 65.16, H 7.16, N 9.09  |
| <b>10</b>       | $C_{24}H_{29}FN_2O_5$            | C 64.85, H 6.58, N 6.30  | C 64.13, H 6.41, N 6.35  |
| <b>11</b>       | $C_{25}H_{33}FN_6O_5$            | C 58.13, H 6.44, N 16.27 | C 58.17, H 6.46, N 16.06 |
| <b>15</b>       | $C_{30}H_{39}FN_2O_7$            | C 64.50, H 7.04, N 5.01  | C 64.36, H 7.22, N 5.02  |