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| BIOSECUR A560D | Pathogen     | Time Kill Study 6/1/2009  |             | Inoculum              | Count/ gm             | 15                    | 30                    | 3                     | 6                     | 9                     | 12                    | 15                    | 20                    | 30                    |
|----------------|--------------|---|-------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| % Conc.        | Type         | Challenge Organism  | Units       | Count                 | Sample                | seconds               | seconds               | minutes               | minutes               | minutes               | minutes               | minutes               | minutes               | minutes               |
| 2.00%          | Yeast        | <i>Candida albicans</i><br>ATCC 10231                             | CFU/ml      | 2.6 x 10 <sup>8</sup> | 1.3 x 10 <sup>6</sup> | 1.0 x106              | 9.6 x105              | 2.6 x104              | 2.1 x104              | 2.0 x104              | 1.6 x104              | 1.5 x104              | 4.2 x103              | 3.2 x102              |
|                |              |   | % reduction | N/A                   | N/A                   | 23.077                | 26.154                | 98                    | 98.385                | 98.461                | 98.769                | 98.846                | 99.677                | 99.975                |
| 2.00%          | Yeast        | <i>Candida glabrata</i><br>ATCC 26512                             | CFU/ml      | 3.6 x 10 <sup>8</sup> | 1.8 x 10 <sup>6</sup> | 1.0 x106              | 1.0 x106              | 1.4 x105              | 1.8 x105              | 7.2 x104              | 3.6 x104              | 9.7 x104              | 3.8 x104              | 3.4 x104              |
|                |              |   | % reduction | N/A                   | N/A                   | 44.444                | 44.444                | 92.222                | 90                    | 96                    | 98                    | 94.61                 | 97.89                 | 98.11                 |
| 2.00%          | Fungus       | <i>Aspergillus brasiliensis</i><br>ATCC 16404 (formerly A. niger) | CFU/ml      | 2.5 x 10 <sup>8</sup> | 1.2 x 10 <sup>6</sup> | 1.7 x 10 <sup>5</sup> | 2.8 x 10 <sup>5</sup> | 9.3 x 10 <sup>4</sup> | 9.5 x 10 <sup>4</sup> | 8.5 x 10 <sup>4</sup> | 9.4 x 10 <sup>4</sup> | 7.3 x 10 <sup>4</sup> | 6.9 x 10 <sup>4</sup> | 8.7 x 10 <sup>4</sup> |
|                |              |   | % reduction | N/A                   | N/A                   | 85.833                | 76.667                | 92.25                 | 92.083                | 92.917                | 92.167                | 93.917                | 94.25                 | 92.75                 |
| 0.50%          | Gram -       | <i>Acinetobacter baumannii</i><br>ATCC 19606                      | CFU/ml      | 7.3 x 10 <sup>8</sup> | 3.6 x 10 <sup>6</sup> | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram -       | <i>Enterobacter aerogenes</i><br>ATCC 35029                       | CFU/ml      | 4.2 x 10 <sup>8</sup> | 2.1x 10 <sup>6</sup>  | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram -       | <i>Enterobacter sakazakii</i><br>ATCC 51329                       | CFU/ml      | 8.7 x 10 <sup>8</sup> | 4.4 x 10 <sup>6</sup> | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram -       | <i>Escherichia coli</i><br>ATCC 25922                             | CFU/ml      | 1.2 x 10 <sup>9</sup> | 6.0x 10 <sup>6</sup>  | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram -       | <i>Escherichia coli</i> O157:H7<br>ATCC 43895                     | CFU/ml      | 4.0 x 10 <sup>8</sup> | 2.0 x 10 <sup>6</sup> | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram -       | <i>Haemophilus influenzae</i><br>ATCC 19418                       | CFU/ml      | 3.2 x 10 <sup>8</sup> | 1.6 x 10 <sup>6</sup> | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram -       | <i>Klebsiella oxytoca</i><br>ATCC 43165                           | CFU/ml      | 4.0 x 10 <sup>8</sup> | 2.0 x 10 <sup>6</sup> | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram -       | <i>Klebsiella pneumoniae</i><br>ATCC 4352                         | CFU/ml      | 1.4 x 10 <sup>9</sup> | 7.0 x 10 <sup>6</sup> | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram -       | <i>Pseudomonas aeruginosa</i><br>ATCC 15442                       | CFU/ml      | 4.8 x 10 <sup>8</sup> | 2.4 x 10 <sup>6</sup> | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram -       | <i>Pseudomonas aeruginosa</i><br>ATCC 27853                       | CFU/ml      | 3.0 x 10 <sup>8</sup> | 1.5 x 10 <sup>6</sup> | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | g- anaerobic | <i>Bacteroides fragilis</i><br>ATCC 25285                         | CFU/ml      | 2.8 x 10 <sup>8</sup> | 1.4 x 10 <sup>6</sup> | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram +       | <i>Micrococcus luteus</i><br>ATCC 7468                            | CFU/ml      | 2.8 x 10 <sup>8</sup> | 1.4 x 10 <sup>6</sup> | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram +       | <i>Proteus mirabilis</i><br>ATCC 7002                             | CFU/ml      | 4.0 x 10 <sup>8</sup> | 2.0 x 10 <sup>6</sup> | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram +       | <i>Staphylococcus haemolyticus</i><br>ATCC 29970                  | CFU/ml      | 4.2 x 10 <sup>8</sup> | 2.1 x 10 <sup>6</sup> | 2.0 x101              | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | 99.999                | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram +       | <i>Streptococcus pyogenes</i><br>ATCC 19615                       | CFU/ml      | 4.0 x 10 <sup>8</sup> | 2.0 x 10 <sup>6</sup> | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram -       | <i>Salmonella choleraesuis</i><br>ATCC 10708                      | CFU/ml      | 4.2 x 10 <sup>8</sup> | 2.1 x 10 <sup>6</sup> | 4.5 x102              | 2.0 x101              | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | 99.997                | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram -       | <i>Serratia marcescens</i><br>ATCC 14756                          | CFU/ml      | 2.6x 10 <sup>9</sup>  | 1.3 x 10 <sup>7</sup> | 2.6 x103              | 1.6 x102              | 1.0 x101              | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | 99.98                 | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram -       | <i>Enterococcus faecalis</i><br>ATCC 29212                        | CFU/ml      | 3.5 x 10 <sup>8</sup> | 1.8 x 10 <sup>6</sup> | 4.5 x105              | 2.9 x105              | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | 75                    | 83.889                | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram -       | <i>Enterococcus faecium</i><br>ATCC 19434                         | CFU/ml      | 7.3 x 10 <sup>8</sup> | 3.6 x 10 <sup>6</sup> | 1.7 x106              | 1.5 x106              | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | 52.778                | 58.333                | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram +       | <i>Listeria monocytogenes</i><br>ATCC 7644                        | CFU/ml      | 1.6 x 10 <sup>9</sup> | 8.0 x 10 <sup>6</sup> | 5.0 x104              | 1.6 x104              | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | 99.375                | 99.8                  | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram +       | <i>Staphylococcus hominis</i><br>ATCC 27844                       | CFU/ml      | 2.8 x 10 <sup>8</sup> | 1.4 x 10 <sup>6</sup> | 7.8 x103              | 4.8 x103              | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | 99.443                | 99.657                | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram +       | <i>Staphylococcus epidermidis</i><br>ATCC 12228                   | CFU/ml      | 1.5 x 10 <sup>9</sup> | 7.5 x 10 <sup>6</sup> | 9.2 x103              | 1.8 x103              | 4.0 x101              | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | 99.877                | 99.976                | 99.995                | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram +       | <i>Staphylococcus saprophyticus</i><br>ATCC 15305                 | CFU/ml      | 9.6 x 10 <sup>8</sup> | 4.8 x 10 <sup>6</sup> | 9.3 x104              | 3.9 x104              | 6.8 x103              | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | 98.062                | 99.188                | 99.858                | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram +       | <i>Streptococcus pneumoniae</i><br>ATCC 6302                      | CFU/ml      | 3.4 x 10 <sup>8</sup> | 1.7 x 10 <sup>6</sup> | 1.3 x104              | 2.6 x103              | 2.0 x101              | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | 99.235                | 99.87                 | 99.998                | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              | > 99.999              |
| 0.50%          | Gram +       | <i>Staphylococcus aureus</i><br>ATCC 29213                        | CFU/ml      | 4.9 x 10 <sup>9</sup> | 2.4 x 10 <sup>7</sup> | 1.8 x105              | 4.0 x104              | 9.4 x103              | 2.6 x102              | 1.4 x102              | 2.0 x101              | 2.0 x101              | 1.0 x101              | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | 99.25                 | 99.833                | 99.961                | 99.998                | 99.999                | 99.999                | 99.999                | 99.999                | > 99.999              |
| 0.50%          | Gram +       | <i>Staphylococcus aureus</i> MRSA<br>ATCC 33592                   | CFU/ml      | 7.3 x 10 <sup>9</sup> | 3.6 x 10 <sup>7</sup> | 2.0 x105              | 1.2 x105              | 6.4 x104              | 3.5 x103              | 1.8 x102              | 5.0 x101              | < 1.0 x101            | < 1.0 x101            | < 1.0 x101            |
|                |              |   | % reduction | N/A                   | N/A                   | 99.444                | 99.667                | 99.822                | 99.99                 | 99.999                | 99.999                | > 99.999              | > 99.999              | > 99.999              |