

# BACTERICIDAL ACTIVITY OF ECOCLEAN-20 AND ECOCLEAN-50

## Study on Mixed Bacterial Culture

Given Product Name

1. Ecoclean 20
2. Ecoclean 50

Manufacturer : Ecohealth Products Pvt Ltd

Mixed cultures containing following Bacterial species:

*Staphylococcus aureus*,  
*Proteus sp*,  
*Pseudomonas sp*,  
*Klebsiella sp*,  
*E.coli*

Minimum Inhibitory Concentration of Ecoclean - 20

| Incubation time/Hours | Product % | Bacterial Concentration |           |           |           |           |           |           |           |
|-----------------------|-----------|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                       |           | $10^{-1}$               | $10^{-2}$ | $10^{-3}$ | $10^{-4}$ | $10^{-5}$ | $10^{-6}$ | $10^{-7}$ | $10^{-8}$ |
| 0                     | 0.25      | +++                     | +++       | +++       | +++       | +++       | +++       | +++       | +++       |
|                       | 0.5       | +++                     | +++       | +++       | +++       | +++       | +++       | +++       | +++       |
| 2                     | 0.25      | ++                      | ++        | ++        | ++        | ++        | ++        | ++        | ++        |
|                       | 0.5       | ++                      | ++        | ++        | ++        | ++        | ++        | ++        | ++        |
| 4                     | 0.25      | ++                      | ++        | ++        | ++        | ++        | ++        | ++        | ++        |
|                       | 0.5       | +                       | +         | +         | +         | +         | +         | +         | +         |

+++ : heavy growth; ++ : moderate growth; - : no growth

**Results** : Bacterial Growth was considerably reduced but not fully arrested up to 4 hours in 0.5% concentration.

### Minimum Inhibitory Concentration of **Ecoclean - 50**

| Incubation time/Hours | Product % | Bacterial Concentration |           |           |           |           |           |           |           |     |
|-----------------------|-----------|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----|
|                       |           | $10^{-1}$               | $10^{-2}$ | $10^{-3}$ | $10^{-4}$ | $10^{-5}$ | $10^{-6}$ | $10^{-7}$ | $10^{-8}$ |     |
| 0                     | 0.25      | +++                     | +++       | +++       | +++       | +++       | +++       | +++       | +++       | +++ |
|                       | 0.5       | +++                     | +++       | +++       | +++       | +++       | +++       | +++       | +++       | +++ |
| 2                     | 0.25      | +++                     | +++       | +++       | +++       | +++       | +++       | +++       | +++       | +++ |
|                       | 0.5       | ++                      | ++        | ++        | ++        | ++        | ++        | ++        | ++        | ++  |
| 4                     | 0.25      | ++                      | ++        | ++        | ++        | ++        | ++        | ++        | ++        | ++  |
|                       | 0.5       | +                       | +         | +         | +         | +         | +         | +         | +         | +   |
| 5                     | 0.25      | +                       | +         | +         | +         | +         | +         | +         | +         | +   |
|                       | 0.5       | -                       | -         | -         | -         | -         | -         | -         | -         | -   |
| 24                    | 0.25      | -                       | -         | -         | -         | -         | -         | -         | -         | -   |
|                       | 0.5       | -                       | -         | -         | -         | -         | -         | -         | -         | -   |

+++ : heavy growth; ++ : moderate growth; - : no growth

**Results :** 100% bacterial growth was arrested in 5 hours at 0.5% concentration.

### Minimum Inhibitory Concentration of **Ecoclean - 50** after Flocculation using **Ecoclean - 20**

| Product % Eco clean 20 | Flocculation Time | Product % Eco clean 50 | Incubation time/Hours | Bacterial Concentration |           |           |           |           |           |           |           |
|------------------------|-------------------|------------------------|-----------------------|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|                        |                   |                        |                       | $10^{-1}$               | $10^{-2}$ | $10^{-3}$ | $10^{-4}$ | $10^{-5}$ | $10^{-6}$ | $10^{-7}$ | $10^{-8}$ |
| 0.25                   | 4 Hours           | 0.25                   | 0                     | ++                      | ++        | ++        | ++        | ++        | ++        | ++        | ++        |
| 0.5                    |                   | 0.5                    |                       | +                       | +         | +         | +         | +         | +         | +         | +         |
| 0.25                   |                   | 0.25                   | 1                     | +                       | +         | +         | +         | +         | +         | +         | +         |
| 0.5                    |                   | 0.5                    |                       | -                       | -         | -         | -         | -         | -         | -         | -         |
| 0.25                   |                   | 0.25                   | 2                     | +                       | +         | +         | +         | +         | +         | +         | +         |
| 0.5                    |                   | 0.5                    |                       | -                       | -         | -         | -         | -         | -         | -         | -         |
| 0.25                   |                   | 0.25                   | 4                     | +                       | +         | +         | +         | +         | +         | +         | +         |
| 0.5                    |                   | 0.5                    |                       | -                       | -         | -         | -         | -         | -         | -         | -         |

++ : moderate growth; - : no growth

**Results:** 100% bacterial growth was arrested in 1 hour at 0.5% concentration.

**Studies conducted by Mr P S Bharani Dharan, Chief Chemist, ITALAB Pvt Ltd.**