KEMP SINGAPORE PTE LTD
Pioneer and Leader in Alkaline Water Since 1988
8 Jalan Kilang Barat, #05-05 Central Link, Singapore 159351

For more information, please contact/visit us @

☎ 6272 5337

www.medilox.com.sg
An advanced medical equipment that generates high level disinfectant which has received international certifications from **CE (Class IIB)**, US FDA etc. **Hypochlorous acid** generated utilizing Medilox technology effectively controls pathogen infections and disinfects crucial equipment and environments.
Q: Do you know how our body removes the germs which penetrate our body?

A: Unexpectedly, little is known about Hypochlorous acid (HOCl) when it comes to its use in our body. In general, it is known that reactive oxygen species (ROS) breaks down invading pathogens. In reality, the true active ingredient involved is Hypochlorous acid (HOCl). An enzyme named MyeloPeroxidase (MPO) found in neutrophil leukocytes reacts with the chlorine in our body to generate Hypochlorous acid. HOCl breaks down pathogens invading the human body within one thousandth (1/1000) of a second. Neutrophil leukocytes have utilised Hypochlorous acid in our bodies and have kept us safe for millions of years.

*Hypochlorous Acid : HOCl
Hypochlorous acid (HOCl) generated in the immune system of the body has no tolerance or toxicity, and is a high level disinfectant sterilizing most germs such as TB, antibiotic resistant bacteria and various viruses etc. within 30 seconds.
What is Medilox?

Medilox is the medical system of a new technology which is safe with no toxicity and a high level disinfectant sterilizing more than 99.9% of all the germs such as TB germs, MRSA, general germs, virus etc. in 30 seconds.

POWERFUL EFFECTIVENESS & SAFETY
It has a speedy and strong sterilizing force without tolerance and completely disinfects more than 99.9% of germs such as TB germs, Staphylococcus aureus, Salmonella, Bacillus subtilis, Staphylococcus aureus, fungi, viruses and spores within 30 seconds irrespective of apocetes.

NON-TOXIC
HOCI generated with the Medilox system is colourless, odourless and does not stimulate or harm eyes, mucosa or damaged skin. It is even safe to the human body if consumed.

ALL AUTOMATED SYSTEM
It is an automatic production system utilizing tightly controlled computer methods to create disinfectant of the highest level of quality with one touch of a button.

ECO FRIENDLY
Unlike other existing disinfectants, HOCI does not leave behind any residue as it reverts back to saline solution over time. Medilox solution is 100% eco-friendly and does not require special treatment for disposal.

BROAD SPECTRUM OF APPLICATION
The Medilox system has passed through rigorous testing to gain approval from international standards such as CE (Class IIb), FDA, KFDA, ISO 13485 (medical instruments), IEC 60601 (medical instruments) and RoHS to ensure reliability as well as consumer trust and satisfaction.

ADVANCED DESIGN
Medilox has been designed with the medical environment in mind and can be installed and used in areas with limited space available.

CS(Customer Satisfaction) SYSTEM
It secures a quick and sure post-management with ISO13485(Quality Management System in the field of medical instruments) certification.

<table>
<thead>
<tr>
<th>Test Organism</th>
<th>Initial Count</th>
<th>0.5 min</th>
<th>1 min</th>
<th>2 min</th>
<th>5 min</th>
<th>10 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mycobacterium tuberculosis</td>
<td>8.2 x 10^6</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>5.8 x 10^6</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>7.0 x 10^6</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Sarcina lutea</td>
<td>8.9 x 10^6</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Escherichia coli (E.coli)</td>
<td>7.7 x 10^6</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Klebsiella pneumoniae</td>
<td>9.1 x 10^6</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Serratia marcescens</td>
<td>8.8 x 10^6</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Enterobacter cloacae</td>
<td>7.5 x 10^6</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Salmonella Typhi</td>
<td>6.5 x 10^6</td>
<td>–</td>
<td>–</td>
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<td>–</td>
</tr>
</tbody>
</table>
### Characteristic of Medilox-Solution

![Graph showing concentration of Medilox and HOCI](image)

**Conversion of Available Free Chlorine by pH**

HOCI is 80 times more effective in sterilization efficacy than OCI due to its neutral charge which allows HOCI to pass into microbial cells unimpeded. Representative percentages of HOCI and OCI are typically controlled by pH level as shown in the left graph.

**Ratio of free available HOCI**

\[
\text{Cl}_2 + \text{H}_2\text{O} \rightleftharpoons \text{HOCI} \rightleftharpoons \text{OCI}^- + \text{H}^+
\]

- pH below 2.7: Dangerous under high concentrations due to gasification of chlorine
- pH = 4.5 - 7.0: Sterilizing efficacy is enhanced with less than 90% of HOCI
- pH above 8.5: Sterilizing efficacy is weak because it is dissociated with over 90% of OCI

### Guideline for the most ideal disinfectant

Toxicity and sterilizing power are in direct proportion in general disinfectants as shown in the below diagram. The most representative chemical of the hypothesis is glutaraldehyde. Both the Safety and Sterilizing power would be the major conditions that an ideal disinfectant should have. Diagram below will give you the clear answer. As you can see, **Medilox** is the ideal disinfectant that satisfies all the four sections.

- **Section A**: Sterilizing power and safety are most ideal.
- **Section B**: Sterilizing power is good but toxicity is high.
- **Section C**: Safety is not bad but sterilizing power is poor.
- **Section D**: Both safety and sterilizing power is the worst.

### Germicidal Power of Chlorine Based Disinfectants (EPA)

![Graph showing germicidal power of various disinfectants](image)

Environmental Protection Agency (EPA) testing has shown that with the same concentration of chlorine, it takes Sodium Hypochlorite 160 minutes to kill 99% of E. coli. Hypochlorous acid achieves the same kill rate in 2 minutes. This shows that Hypochlorous acid is 80 times more bactericidal than Sodium Hypochlorite.

### Test for M. Tuberculosis

<table>
<thead>
<tr>
<th>Test organism</th>
<th>Initial Count</th>
<th>Survivor count per ml</th>
<th>0.5 min</th>
<th>1 min</th>
<th>2 min</th>
<th>5 min</th>
<th>10 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salmonella Enteritidis</td>
<td>7.1x10⁷</td>
<td></td>
<td>—</td>
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<td>—</td>
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</tr>
<tr>
<td>Shigella sonnei</td>
<td>6.9x10⁷</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Citrobacter freundii</td>
<td>6.2x10⁷</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Proteus mirabilis</td>
<td>9.1x10⁷</td>
<td>—</td>
<td>—</td>
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<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Pseudomonas aeruginosa</td>
<td>6.6x10⁷</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Acinetobacter baumannii</td>
<td>6.2x10⁷</td>
<td>—</td>
<td>—</td>
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<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Stenotrophomonas maltophilia</td>
<td>5.9x10⁷</td>
<td>—</td>
<td>—</td>
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<td>—</td>
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</tr>
<tr>
<td>Candida albicans</td>
<td>5.4x10⁷</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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<tr>
<td>Candida glabrata</td>
<td>5.2x10⁷</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Bacillus subtilis, vegetative form</td>
<td>5.8x10⁷</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
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</tr>
<tr>
<td>Bacillus subtilis, spore form</td>
<td>6.2x10⁷</td>
<td>&lt; 10⁰</td>
<td>2.0x10⁰</td>
<td>4.5x10⁰</td>
<td></td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

**Test for M. Tuberculosis**

<table>
<thead>
<tr>
<th>Control</th>
<th>Exposure time</th>
</tr>
</thead>
<tbody>
<tr>
<td>+</td>
<td>0.5 min</td>
</tr>
<tr>
<td>+</td>
<td>1 min</td>
</tr>
<tr>
<td>+</td>
<td>3 min</td>
</tr>
</tbody>
</table>

- **Mycobacterium tuberculosis**
- **Mycobacterium chelonae**
- **Mycobacterium avium**
- **Mycobacterium altusceus**

Environmental Protection Agency (EPA) testing has shown that with the same concentration of chlorine, it takes Sodium Hypochlorite 160 minutes to kill 99% of E. coli. Hypochlorous acid achieves the same kill rate in 2 minutes. This shows that Hypochlorous acid is 80 times more bactericidal than Sodium Hypochlorite.
Application of **Medilox** in Medicine

**General (Major) Hospitals**
OR, ICU, ER, CRU, and General Wards etc.

**Local Hospitals & Clinics**
Internal medicine, OB/GYN, Dental, Urology etc.

**High Level Disinfection**
Endoscope, Surgical devices and Appliances etc.

**Intermediate Level Disinfection**
Ambu, Circuit, Ventilator, Incubator, Os line etc.

**Low Level Disinfection**
Dressing set, Bed etc.
All environment in hospital.

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Application of **Medilox** in Food

**Sanitizing Food**
Vegetables, Meat, Fruit, Seafood etc.

**Disinfection of Food Equipment**
Cocking utensils, Storage container, Tableware, spoon, Cutting board, Clothes, Boots etc.

**Application Fields**
Food processing, & manufacturing company, Franchise, Cafeteria, Restaurant industry, Food suppliers etc.

**Washing and Cleaning in Working Environment**
Preparation room, Table, Dishcloth, Counter tops, Floor, Hands, Cold storage, Conveyor system etc.

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Application of **Medilox** in Others

**Agriculture & Flower Plant**
Livestock & Poultry farm

**Education Facilities**
Commercial Facilities

**Hospitalities & Residential**
Cultural & Public Facilities

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<table>
<thead>
<tr>
<th>Test organism</th>
<th>Initial count</th>
<th>Class Condition</th>
<th>0.5 min</th>
<th>1 min</th>
<th>2 min</th>
<th>5 min</th>
<th>Dirty Condition</th>
<th>0.5 min</th>
<th>1 min</th>
<th>2 min</th>
<th>5 min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staphylococcus aureus ATCC 29213</td>
<td>7.5×10⁶</td>
<td>-</td>
<td>-</td>
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</tr>
<tr>
<td>Enterococcus faecalis ATCC 29212</td>
<td>9.0×10⁶</td>
<td>-</td>
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<td>-</td>
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<td>-</td>
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</tr>
<tr>
<td>E. coli ATCC 25922</td>
<td>6.2×10⁷</td>
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<tr>
<td>Pseudomonas aeruginosa ATCC 27853</td>
<td>8.1×10⁷</td>
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</tr>
</tbody>
</table>

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**Sterilizing Efficiency in Dirty Condition**

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<table>
<thead>
<tr>
<th>Incomplete disinfection of equipment?</th>
</tr>
</thead>
</table>

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Testing Places:
Medilox Corporation, 1252-1, Naka-Yeara, Taka, Hino-shi, Tokyo 208-0031, Japan
Tel: +81-42-365-3021
Fax: +81-42-365-3022

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Disclaimer for the Test:
This testing was conducted under specific conditions and using specific equipment. The results may not be applicable to all situations. It is recommended to consult with Medilox Corporation for further details.
SOOSAN E&C CO., LTD has successfully developed the Medilox system and Medizyme based on technology and experience accumulated in the field of healthcare for the past 20 years. Medilox is committed to satisfying customers local and abroad with strong competitiveness based on several patents, KT Mark (Korean Excellent Technology) from the ministry of Science and Technology, Excellent Quality Product from the Korean Procurement Service, ISO 9001 and I34065 certification. It is our goal for our products to contribute to the field of healthcare field in the 21st century and beyond.

**Medilox**

**MS-4000P**
- Concentration: 50–100 ppm
- pH: 4.5–7.0
- Redox Potential: 850–1000 mV
- Production Capacity: 240L/hr
- Power Source: 110–120/230–240V, 60Hz
- Power Consumption: 120W
- Dimensions: W: 365mm, L: 300mm, H: 540mm
- Weight: 24 Kg
- Water Requirement: Tap water, hardness: less than 80ppm, pH: 6.5–7.5, Pressure: more than 1.5kg/cm²
- Refrigeration: 4L x 4 box / 1 box
- Storage Tank (Option): 30L / 60L

**Medilox**

**MS-2000**
- Concentration: 50–100 ppm
- pH: 4.5–7.0
- Redox Potential: 850–1000 mV
- Production Capacity: 120L/hr
- Power Source: 110–120/230–240V, 60Hz
- Power Consumption: 120W
- Dimensions: W: 375mm, L: 145mm, H: 380mm
- Weight: 12 Kg
- Water Requirement: Tap water, hardness: less than 80ppm, pH: 6.5–7.5, Pressure: more than 1.5kg/cm²
- Refrigeration: 4L x 2 box / 1 box
- Storage Tank (Option): 20L / 40L

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**Medizyme**

**Triple Enzyme Detergent for Medical Instruments**

Medizyme is an effective, advanced medical enzyme detergent that digests protein, carbohydrate and lipid with a combination of multiple enzymes such as Protease, Amylase and Lipase to effectively remove biofilm.

![Medizyme](image)

1Kg 4Kg

**Type A:** Manual Clean (Front)
**Type B:** Automatic Clean (Low-Foam)

**Neutral detergents that contain multi-enzymes are compatible for medical equipment especially cleaning of endoscopes.**

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**Toxicity Test of Medilox**

<table>
<thead>
<tr>
<th>Inspection Item</th>
<th>Conclusion</th>
<th>Inspection Item</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity test</td>
<td>Normal</td>
<td>Skin stimulating test</td>
<td>Normal in 48 hours</td>
</tr>
<tr>
<td>Accumulation toxicity test</td>
<td>Normal</td>
<td>Eye irritation test</td>
<td>Normal in 7 days</td>
</tr>
<tr>
<td>Vagina mucosa stimulating test</td>
<td>Non-stimulating</td>
<td>Colony formation deliquation test</td>
<td>No problem</td>
</tr>
</tbody>
</table>

[Conclusion] The Medilox solution has no toxicity at low concentrations (50-80ppm). It has no negative effects when it is consumed or comes in contact with skin, eyes or damaged mucosa. It does not harm healthy tissue, safe and non-irritating.

Chinese People's Liberation Army Medical Science Institute - Sterilization Inspection Center
March, 2002

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**Enzyme and Efficacy**

<table>
<thead>
<tr>
<th>Enzyme</th>
<th>Protein</th>
<th>Carbohydrate</th>
<th>Lipid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protease</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Amylase</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lipase</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Protein, carbohydrate and lipid cannot be removed by water or normal detergents. Contaminants such as blood, protein and mucous that adhere onto medical equipment turn into hard scale over time. This can be effectively prevented or removed by Medizyme, our multi-enzyme detergent.