



Silky-Soft® Healing and Curing

AUTHOR: JOHN A. LOPES PH.D.

Microcide®, Inc. 6633 18 Mile Rd, #2G, Sterling Heights, MI 48314
Info@microcide.com, 248-526-9663, www.microcide.com

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Abstract

Silky-Soft® is a microbicidal dermal cleaner and sanitizer treatment for hand and body equivalent to chlorhexidine surgical scrub without the harsh chemicals. Effective against a broad spectrum of microbicidal activity, providing a safer alternative for use by hospitals and home care personnel.

Author: John A. Lopes Ph.D

Health Care Notes

The microbes living on dermal tissues have adapted to competitive nutritive and physical conditions to thrive and proliferate. However, when introduced into the host by devices used in medical procedures, such as catheters or ventilators, otherwise harmless microbes proliferate and produce toxins and infections in the host. Earlier overlooked infections, that were not present at the time of admission, called NOSOCOMIAL infections, are acquired during the process of receiving health care. These nosocomial infections are called Healthcare Associated Infections (HAI). Increased virulence combined with or without weakened immune systems, can aid skin dwelling bacteria to break dermal barriers causing bed sores or severe infections.

Most common HAI is catheter based central line-associated bloodstream infection (CLABSI) due to a large vein insertion in the neck, chest, or groin. CLABSI costs about \$47,000 per patient and has the highest death rate with billions in cost. In the USA, the costs of HAI can reach ~\$10–33 billion per year.

Bacterial infections cause about 90% of healthcare-associated infections. Of these 20% are caused by multidrug resistant bacteria (MDR). Due to excessive use of antibiotics, almost 20% of all reported bacteria are multidrug-resistant and are among the major complications of HAI. Even skin infections due to bedsores or for prolonged bed ridden patients can be a financial and heavy social burden.

Presently used skin sanitizers are either too harsh, toxic or not suitable for general use. There is a need for an effective broad spectrum milder skin friendly product to supplement the present efforts of reducing nosocomial infections. SILKY-SOFT® as a cleaner and sanitizer offers an effective cleaning and sanitizing solution to use on delicate dermal surfaces.

Silky-Soft® is a healing and curing dermal cleaner and sanitizer treatment against bacteria, yeast and viruses. Because it has the highest mildness index it can be used on almost all skin types “young and old”. It has been found to be hypoallergic. The product made from FDA approved food grade and GRAS ingredients is free of color or fragrances and toxic ingredients, It can be washed off or left on skin without rinsing for longer activity. Silky-Soft® has unique broad membrane microbicidal activity and kills both antibiotic resistant and sensitive bacteria.

SILKY-SOFT Sanitizer Treatment for Patient Care

- Effective against MRSA & VRE (Vancomycin resistant enterococcus)
- Fast acting and effective against influenza and Covid
- Equivalent to Chlorhexidine surgical scrub or pre-surgical body wash
- Reduction of “Central line” nosocomial infections
- Repeat use on sensitive skin for medical personnel
- Ensuring sanitation of new patient admissions
- Nursing Homes and Hospital treatment of bed sores and use for bed ridden patients
- Highest rated E2 USDA sanitizer

1. Background Dr. John Lopes Ph.D.

Dr. Lopes is a biomedical scientist. He has a substantial 50 years of background in research (New York University School of Medicine), industry (Diversey Corporation and section Head for Clinical Microbiology at the Samaritan Health Center, Manager of R&D for Unilever and academia. Dr. Lopes has authored chapters on “Disinfection, Sterilization, and Preservation” in educational textbooks. He is further certified by the Michigan Department of Public Health as Director of Microbiology and by American Board of Bioanalysis as the Clinical Laboratory Director. He was recognized in Marquis WHO’s WHO in Science & Technology in the U.S. and the World Edition. [Biography](#)

Microcide ® was founded as a research and development firm in Michigan in 1990 by John A Lopes, Ph.D. and Rose J Lopes. Their vision was to create a line of alternative safe and non-toxic, eco-friendly biodegradable cleaners and disinfectants. They have maintained a focus on high quality research and product development.

2. Ingredients

Silky-Soft® is composed of FDA approved food grade and GRAS Ingredients

Sodium C14-16 Olefin Sulfonate
Lactic acid
Xanthan Polysaccharides
Decyl Lactylate
Aloe vera
Benzoic acid
Sodium Hyaluronate

Silky-Soft® does not contain the following harmful and/or toxic chemicals

Iodine
Triclosan
Ethyl Alcohol
Chloroxylenol
Nonyl-phenoxy-poly ethanol
Para-chloro-meta-xyleneol (PCMX)
Quaternary ammonium compounds (QACs)
Chlorohexidine
Bisphenol A (BPA)

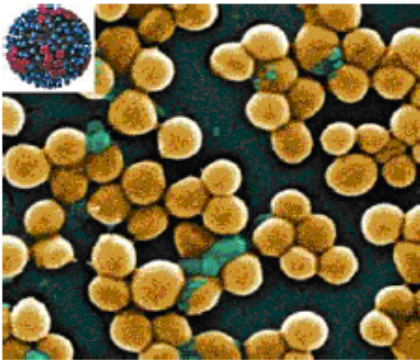
3. Product Brochure

Silky-Soft®

Sanitizing Soap for Silky Soft Skin®

Dermal Cleaner & Sanitizer in One!

Leave it on skin or Rinse it off!



Coronavirus, VRE, H1N1
Influenza Virus and MRSA



Why use Silky-Soft?

- ❖ As effective as 0.2% Chlorhexidine scrub
- ❖ USDA highest E2 sanitizer rated
- ❖ Kills antibiotic resistant bacteria
- ❖ Broad spectrum antimicrobial activity
- ❖ Gentle, non-toxic, mild on repeat use
- ❖ Kills MRSA*, VRE**, H1N1 virus in seconds
- ❖ Fungicidal, tuberculocidal and anti-protozoan activity
- ❖ Fast and Effective against COVID-19
- ❖ Contains Hyaluronic Acid and Aloe vera

*MRSA= Methicillin Resistant *Staphylococcus aureus*;
**VRE= Vancomycin Resistant *Enterococcus*

Multiple Uses

- ❖ Pre-surgical skin preparation
- ❖ Hand & Skin Antibacterial Wash
- ❖ Hand prep prior to glove insert
- ❖ Preventing acne and skin infections
- ❖ Improved patient care
- ❖ Bedsores
- ❖ Body odor
- ❖ Improved Personnel Safety

Free of Harmful Toxic Chemicals

- ❖ Iodine
- ❖ Triclosan
- ❖ Ethyl alcohol
- ❖ Chloroxylenol
- ❖ Nonyl-phenoxy-poly-ethanol
- ❖ Para-chloro-meta-xyleneol (PCMX)
- ❖ Quaternary ammonium Compounds (QACs)

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www.microcide.com
Dr. John A Lopes Ph.D.

E-mail: info@microcide.com
Contact: (248)-526-9663
Patented Technology

a. Spectrum of Microbicidal Activity

Silky-Soft: Spectrum of Microbicidal Activity

Microorganisms

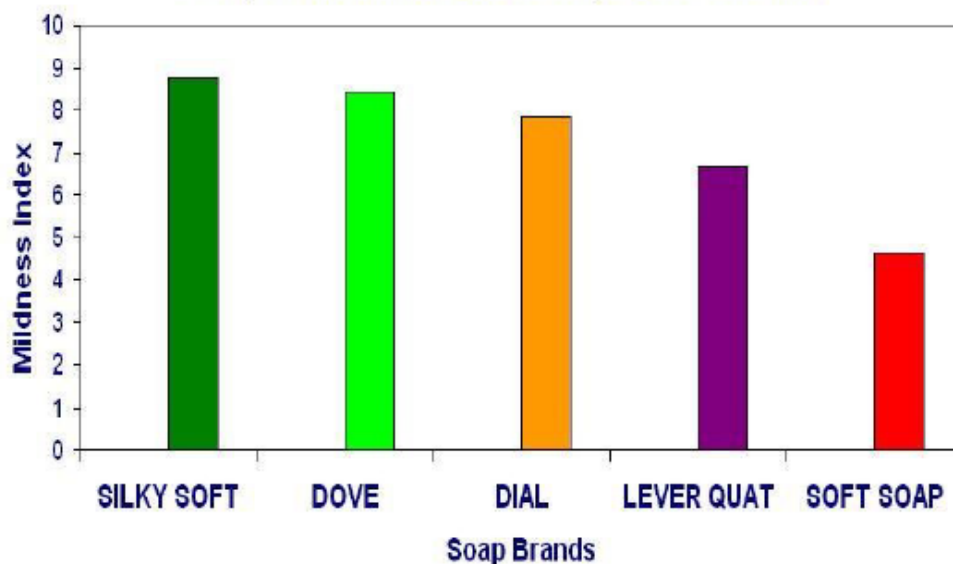
<i>Staphylococcus aureus</i>	MRSA	Methicillin Resistant <i>Staphylococcus aureus</i>
<i>Enterococcus faecalis</i>	VRE	Vancomycin resistant enterococcus
Influenza A	H1N1	2009 Influenza A VIRUS (Novel H1N1 Strain A/Mexico/4108-2009) CDC@ 2009712192 COVID-19
<i>Coronavirus</i>		
<i>Escherichia coli</i>	0157:H7	
<i>Klebsiella pneumoniae</i>		
<i>Salmonella typhi</i>		
<i>Mycobacterium bovis</i>	BCG	Tuberculosis
<i>Pseudomonas aeruginosa</i>		
<i>Enterobacter aerogenes</i>		
<i>Candida albicans</i>	Yeast	
<i>Streptococcus dysgalactiae</i>		
<i>Streptococcus agalactiae</i>		

Microbicidal Activity Equivalent to 0.2% Chlorhexidine (surgical scrub)

Superior to : LEVER 2000, DIAL, IODOPHOR and other products

b. Comparative Mildness Index

Comparative Mildness of Silky-Soft® On Skin



4. USDA/FDA Hand Sanitizing Germicidal Test

Panel for approval of disinfecting germicidal products received E2 highest rating

a. *Staphylococcus Aureus* ATCC 6538

Table1. Activity of SILKY-SOFT® Vs *Staphylococcus aureus* ATCC 6538.

Test method: SDA modified AOAC available chlorine germicidal equivalent concentration test

Test Sample	Conc.	Growth in Subculture Tube Number										Neut. Cont.
		1	2	3	4	5	6	7	8	9	10	
NaOCl (ppm)	200	-	-	-	-	-	-	+	+	+	+	+
	100	-	-	-	+	+	+	+	+	+	+	+
	50	-	-	+	+	+	+	+	+	+	+	+
SILKY-SOFT® (Dilution)	Undil.	-	-	-	-	-	-	-	-	-	-	+
	1:16	-	-	-	-	-	-	-	-	-	-	+
	1:32	-	-	-	-	-	-	-	-	-	-	+
	1:64	-	-	-	-	-	-	-	-	-	+	+
	1:128	-	-	-	-	-	+	+	+	+	+	+
	1:256	-	-	-	+	+	+	+	+	+	+	+
	1:512	+	+	+	+	+	+	+	+	+	+	+

+ = growth in subculture; - = no growth in subculture; + = growth in subculture;

* = Neutralizing growth medium control; Sterility controls showed no growth.

b. *Salmonella typhi* ATCC 6539

Table 2. Efficacy of SILKY-SOFT® vs *Salmonella typhi* ATCC 6539.

Test method: SDA modified AOAC available chlorine germicidal equivalent concentration test

Test Sample	Conc.:	Growth in Subculture Tube Number										Neut. Cont.
		1	2	3	4	5	6	7	8	9	10	
NaOCl (PPM)	200	-	-	-	-	-	-	+	+	+	+	+
	100	-	-	-	-	+	+	+	+	+	+	+
	50	-	-	+	+	+	+	+	+	+	+	+
SILKY-SOFT® (Dilution)	Undil.	-	-	-	-	-	-	-	-	-	-	+
	1:16	-	-	-	-	-	-	-	-	-	-	+
	1:32	-	-	-	-	-	-	-	-	+	+	+
	1:48	-	-	-	-	-	-	+	+	+	+	+
	1:64	-	-	-	-	+	+	+	+	+	+	+
	1:64	-	-	-	-	+	+	+	+	+	+	+
	1:128	-	-	+	+	+	+	+	+	+	+	+
	1:256	+	+	+	+	+	+	+	+	+	+	+

+ = growth in subculture; - = no growth in subculture

* = Neutralizing growth medium control; Sterility controls showed no growth.

5. Efficacy Against Antibiotic Resistant Bacteria

a. Methicillin Resistant Staphylococcus Aureus (MRSA)

TABLE 4: CALCULATED DATA

Test Substance: Silky Soft Sanitizing Liquid Hand Soap (Lot #3312009)

Test Organism	Exposure Time	Test Population Control CFU/mL* (Log ₁₀)	Number of Survivors (CFU/mL)*	Log ₁₀ Number of Survivors	Percent Reduction	Log ₁₀ Reduction
Methicillin Resistant <i>Staphylococcus aureus</i> – MRSA (ATCC 33592)	15 seconds	1.11 x 10 ⁵ (6.045)	1.8 x 10 ²	2.26	>99.9%	3.79
	30 seconds		<5	<0.7	>99.999%	>5.3
	60 seconds		<5	<0.7	>99.999%	>5.3
	2 minutes		<5	<0.7	>99.999%	>5.3

* Colony forming units per ml of test mixture

b. Vancomycin Resistant Enterococcus Faecalis (VRE)

TABLE 4: CALCULATED DATA

Test Substance: Silky Soft Sanitizing Liquid Hand Soap (Lot #3312009)

Test Organism	Exposure Time	Test Population Control CFU/mL* (Log ₁₀)	Number of Survivors (CFU/mL)*	Log ₁₀ Number of Survivors	Percent Reduction	Log ₁₀ Reduction
Methicillin Resistant <i>Staphylococcus aureus</i> – MRSA (ATCC 33592)	15 seconds	1.11 x 10 ⁵ (6.045)	1.8 x 10 ²	2.26	>99.9%	3.79
	30 seconds		<5	<0.7	>99.999%	>5.3
	60 seconds		<5	<0.7	>99.999%	>5.3
	2 minutes		<5	<0.7	>99.999%	>5.3
Vancomycin Resistant <i>Enterococcus faecalis</i> – VRE (ATCC 51575)	15 seconds	1.27 x 10 ⁶ (6.104)	<5	<0.7	>99.999%	>5.4
	30 seconds		<5	<0.7	>99.999%	>5.4
	60 seconds		<5	<0.7	>99.999%	>5.4
	2 minutes		<5	<0.7	>99.999%	>5.4

* Colony forming units per mL of test mixture

TABLE 5: VERIFICATION OF ANTIBIOTIC RESISTANCE

Test Organism (ATCC)	Zone of Inhibition (mm)	CLSI* Resistant Range (mm)
Methicillin Resistant <i>Staphylococcus aureus</i> (ATCC 33592)	6	≤ 10
Quality Control Organism (ATCC)	Zone of Inhibition (mm)	CLSI* Acceptable Range (mm)
<i>Staphylococcus aureus</i> (ATCC 25923)	19	18 - 24

*CLSI = Clinical and Laboratory Standards Institute

Silky-Soft attacks bacteria by general membrane based activity which is independent of what causes antibiotic resistance, providing a more effective solution

6. Comparison Silky-Soft® Dermal Cleaner Sanitizer vs Chlorhexidine . Staph Aureus, E. coli, Pseudomonas Aeruginosa and Candida Albicans

Comparison of Lethal Activity of Silky Soft Dermal Cleaner Sanitize Chlorohexidine gluconate against <i>S. aureus</i> , <i>E. coli</i> , <i>Ps. aeruginosa</i> and <i>Candida albicans</i>								
Test Product / Concentration	Growth After Contact Time (seconds)							
	<i>S. aureus</i> (0.98x10 ⁷ /ml)		<i>E. coli</i> (1.0x10 ⁷ /ml)		<i>Ps. Aeruginosa</i> (1.42x10 ⁷ /ml)		<i>Candida albicans</i> (1.7x10 ⁶ /ml)	
	30"	60"	30"	60"	30"	60"	30"	60"
Silky Soft (1:16)	-	-	-	-	-	-	+	-
Chlorohexidine (2.0%)	+	-	-	-	-	-	-	-
Neutralizer control	+++	NA	+++	NA	+++	NA	+++	NA
Control (water)	+++	NA	++	NA	++	NA	++	NA

- = No growth; + = Growth; NA = Not Applicable; Antiseptic testing on mucosal surfaces: *Federal Register*, V.47, No., 101, p. 22898, January 6, 1978. The test cultures were *Staphylococcus aureus* ATCC 6538, *Escherichia coli* ATCC 11229, *Pseudomonas aeruginosa* ATCC 10145, and *Candida albicans* ATCC 18804.

7. Microbicidal Spectrum: Staph aureus E. coli, Pseudomonas aeruginosa.

Efficacy of Silky-Soft Hand Soap against <i>S. aureus</i> , <i>E. coli</i> , and <i>Ps. aeruginosa</i>						
Test Product	Growth After Contact Time (seconds/minutes)					
	<i>S. aureus</i> (0.98x10 ⁷ /ml)		<i>E. coli</i> (1.0x10 ⁷ /ml)		<i>Ps. aeruginosa</i> (1.42x10 ⁷ /ml)	
	30"	60"	30"	60"	30"	60"
Silky-Soft (1:4 dilution)	-	-	-	-	-	-
Silky-Soft (1:8 dilution)	-	-	-	-	-	-
Silky-Soft (1:16 dilution)	-	-	-	-	-	-
Chlorohexidine (2% conc.)	++	++	-	-	-	-
Neutralizer control	+++					
Control (water)	+++	NA	++	NA	++	NA
- = No Growth, + = Growth						

8. Antiviral Efficacy

H1N1 Influenza A

TABLE 1: Assay Results

Effects of Silky Soft Sanitizing Liquid Hand Soap (#3312009) Against 2009-H1N1 Influenza A virus (Novel H1N1) in Suspension Following 15 second and 30 second Exposure Time

Dilution	Virus Control		Test: 2009-H1N1 Influenza A virus (Novel H1N1) + Silky Soft Sanitizing Liquid Hand Soap	
	Exposure Time 15 Seconds	Exposure Time 30 Seconds	Exposure Time 15 Seconds	Exposure Time 30 Seconds
Cell Control	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0
10 ⁻²	++++	++++	TTTT	TTTT
10 ⁻³	++++	++++	0 0 0 0	0 0 0 0
10 ⁻⁴	++++	++++	0 0 0 0	0 0 0 0
10 ⁻⁵	++++	++++	0 0 0 0	0 0 0 0
10 ⁻⁶	++++	0 + 0 0	0 0 0 0	0 0 0 0
10 ⁻⁷	0 0 0 0	0 + 0 0	0 0 0 0	0 0 0 0
TCID ₅₀ /0.1 mL	10 ^{6.5}	10 ^{6.0}	≤10 ^{2.5}	≤10 ^{2.5}
Percent Reduction	NA	NA	≥99.99%	≥99.97%
Log ₁₀ Reduction	NA	NA	≥4.0 log ₁₀	≥3.5 log ₁₀

(+) = Positive for the presence of test virus
 (0) = No test virus recovered and/or no cytotoxicity present
 (T) = Cytotoxicity present
 (NA) = Not applicable

SARS Cov-2 (COVID-19)

Efficacy vs SARS-Cov-2		
Challenge Virus Log 7.38 TCID 50		
Test Date 12-20-2020		
Product	Contact Time	% Kill
	Seconds	Percentage
SILKY SOFT®		
	60	99.9998
	120	99.9838
	300	99.9838

The efficacy tests were performed at a BSL-3 Biosafety Level-3 Certified Laboratory able to handle highly infectious agents.

9. Efficacy against Yeast and Fungi

1. Candida Albicans

Comparison of Lethal Activity of Silky-Soft® Dermal Cleaner Sanitizer Chlorohexidine gluconate against Candida Albicans		
Test Product/Concentration	Growth After Contact Time (seconds/minutes) <i>Candida albicans</i> (1.7x10 ⁶ /ml)	
	30"	60"
Silky-Soft (1:4 dilution)	-	-
Silky-Soft (1:8 dilution)	-	-
Silky-Soft (1:16 dilution)	+	-
Chlorohexidine (2% conc.)	-	-
Neutralizer control	+++	NA
Control (water)	+++	NA
- = No Growth, + = Growth		

10. Efficacy against Tuberculosis

Mycobacterium Bovis Test for Effectiveness against Tuberculosis Performed using FDA good lab practices

Test Substance: Silky Soft Sanitizing Liquid Hand Soap (Lot #2212009)						
Test Organism	Exposure Time	Test Population Control CFU/mL* (Log ₁₀)	Number of Survivors (CFU/mL*)	Log ₁₀ Number of Survivors	Percent Reduction	Log ₁₀ Reduction
Mycobacterium Bovis-BCG	30 Seconds	5.2 x 10 ⁵ (5.72)	4.2 x 10 ⁵	5.62	19.20%	0.10
	60 Seconds		3.3 x 10 ⁵	5.52	36.50%	0.20
	2 Minutes		4.3 x 10 ⁵	5.63	17.30%	0.09
	5 Minutes		9.6 x 10 ⁴	4.98	81.50%	0.74

* Colony forming units per mL of test mixture

11. Microbicidal activity of liquid Hand Soaps against Staph. Aureus & Salmonella

**TABLE 1. COMPARISON OF MICROBICIDAL ACTIVITY OF LIQUID HAND SOAPS
BY THE AVAILABLE CHLORINE GERMICIDAL EQUIVALENT TEST**

HAND SOAP BRAND NAME	Activity against <i>Staph. aureus</i> equivalent to 50 ppm of hypochlorite after dilution with water						
	Undiluted	1:2	1:4	1:16	1:64	1:128	1:256
LEVER 2000®	NO	@	@	@	@	@	@
DIAL®	NO	@	@	@	@	@	@
IODOPHOR*	YES	YES	U	U	U	U	U
SILKY-SOFT™	YES	YES	YES	YES	YES	YES	YES

@ = Not done as undiluted samples showed no activity. * = As reported in the West-Agro literature. U = Not available.

**TABLE 2. COMPARISON OF MICROBICIDAL ACTIVITY OF LIQUID HAND SOAPS
BY THE AVAILABLE CHLORINE GERMICIDAL EQUIVALENT TEST**

HAND SOAP BRAND NAME	Activity against <i>Salmonella typhi</i> equivalent to 50 ppm of hypochlorite after dilution with water					
	Undiluted	1:2	1:4	1:8	1:16	1:64
LEVER 2000®	NO	@	@	@	@	@
DIAL®	NO	@	@	@	@	@
IODOPHOR*	YES	YES	U	U	U	U
SILKY-SOFT™	YES	YES	YES	YES	YES	YES

@ = Not done as undiluted samples showed no activity. * = As reported in the West-Agro literature. U = Not available.

Summary

Silky-Soft® Dermal Cleaner and Sanitizer is a much safer broad spectrum antimicrobial skin cleanser compared with chlorhexidine gluconate

1. Formulated with non-toxic ingredients
2. Contains Hyaluronic Acid, Aloe vera and Alpha Hydroxy Acid
3. Gentle on skin, mild on repeat use, leaves hands feeling silky soft
4. Rapidly kills germs broad spectrum microbicidal activity
5. Ideal for healthcare personnel who need to constantly wash themselves and their patients
6. Has the highest E2 USDA sanitizing rating

12. References

1. Time Kill Assay for Antimicrobial Agents, Becky Lien, B.A., ATS Labs Testing for MRSA & VRE, March 15,2010,
2. Evaluation of Antiviral Properties of a Product Using a Virucidal Suspension Assay, Kelleen Gutzmann, M.S., ATS Labs, Testing for 2009-H1N1 Influenza A virus (Novel H1N1), January 6, 2010
3. Time Kill Assay for Antimicrobial Agents, Becky Lien, B.A., ATS Labs, Testing for Mycobacterium bovis – BCG, March 24,2010

John A. Lopes Ph.D. Biography

JOHN A. LOPES, Ph.D., C.L.D

2209 Niagara Dr. Troy, MI 48314

248-526-9663

email: info@microcide.com

PROFESSIONAL: Relations & Contributions

- ★ Contributed one chapter in book: "Disinfection, Sterilization and Preservation" (William & Wilkins. 2000).
- ★ Contributed two chapters in book: "Disinfection, Sterilization and Preservation" (Lea & Febiger, 1992).
- ★ Listed in Marquis WHO's WHO in Science & Technology in the U.S. and the World Edition.
- ★ Recipient of national competitive SBIR grant awards from the NIH and NASA.
- ★ Co-chaired virology session at an International Conference on Communicable Diseases, 1973.
- ★ Certified by the Michigan Department of Public Health as Director of Microbiology
- ★ Certified by American Board of Bioanalysis as the Clinical Laboratory Director
- ★ Associate Partner for NASA Food Technology for Commercial Space Center, ISU, Ames Iowa
- ★ Adjunct Assistant Professor at the Iowa State University, Ames Iowa
- ★ Participating member: Center for Innovation in Food Technology, Toledo, Ohio.
- ★ Affiliate Partner for NASA Food Technology for Commercial Space Center
- ★ Numerous scientific publications in peer reviewed journals
- ★ Several patents on new product discoveries.

EDUCATION

Asso. Res. Scient. (Human. Cell Membranes) 1971-1973: New York Univ. Sch. Med., New York
Assist Prof (Bacterial Membranes) 1969-1971: Univ. of Connecticut Sch. Med., Conn.
Ph.D. Microbiology 1966-1969: University of Waterloo, Ont. Canada.
M.Sc. Virology 1960-1963: Grant Med. College, Univ. of Bombay.
B.Sc. Chemistry & Microbiology 1956-1960: St. Xavier's College, Univ. of Bombay.

EMPLOYMENT

Microcide, Inc., Troy, MI: President & Director of Technology 1990 - PRESENT
Diversey Corp., Wyandotte, MI: Senior Microbiologist; 1981-1989
Samaritan Health. Center, Detroit: Section Head Clinical Microbiology; 1978-1981
Unilever, Bombay: Manager R & D, Microbiology; 1976-1978
Haffkine Institute, Bombay: Assistant Director (Immunology) & Sen. Res. Officer (Enteroviruses); 1973-1976
Univ. Conn. Sch. Med, Connecticut: Assistant Professor, 1969-71
New York Univ. Sch. Med., NY: Asso. Res. Scientist. 1971-1973
Univ. of Waterloo, Canada: Teaching Fellow; 1966-1969
CIBA Research Center, Bombay: Research Chemist, 1963-1966

SCIENTIFIC INTERESTS

Food Safety: Acid anionic sanitizers- discovery, mode of action, test methods & applications.
Chemotherapy: Evaluation of antimicrobials in tissue culture, in vitro, in ovo and in vivo using laboratory animals. Mode of action of antimicrobials; Development of new antimicrobials.
Immunology: Development of vaccines, Antigen and Antibody Production, Serological Surveys.
Membranes: Structure-function relationship: Bacterial and mammalian cell membranes (gram -negative bacteria, human red blood cells.
Oncology: Chronic lymphocytic leukemia.
Microbiology: Pharmaceutical, Food, Clinical, Cosmetic and Fermentation
Virology: Enteroviruses, SV 40, Influenza, and Vaccinia.

MEMBERSHIPS: Professional Societies

- ★ American Society for Microbiology,
- ★ Institute of Food Technology,
- ★ Canadian Society of Microbiologists,
- ★ Society for Industrial Microbiology,
- ★ American Dairy Science Association, American Board of Bioanalysis.
- ★ International Association of Food Protection.