

## Chapter 21

# Vallavan Herbal Hand Sanitizer

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### ABSTRACT

In the verge of vaccination programs around the globe, hand hygiene is a mainstay of efforts to prevent the spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the virus that causes COVID-19. People who have the infection may show few, if any, symptoms, but still be able to transmit the virus. The virus spreads via droplets in the air or on commonly used surfaces, such as door handles. Therefore, our hand hygiene and Washing the hands thoroughly with soap and water for at least 20 seconds is a highly effective way to defend against harmful bacteria and viruses. Herbal hand sanitizer made from combination of Aloe Vera, Neem, Alum and Champhor. This is natural skincare solution that is absolutely great for your hand and skin. All those herbs and other natural ingredients can benefit our skin and kills 99.9% of germs including bacteria, microorganisms and flu virus. This herbal hand sanitizer rinses gives a fresh feel and maintain skins natural texture.

**Key words :** Hand Sanitizer, Herbal, Washing, Virus, Highly effective

### 1. INTRODUCTION

Hand sanitizers, otherwise known as hand antiseptics is an alternative to hand washing with soap and water. It can be made in different form such as gel, foam and liquid solution (sprays). The base of all hand sanitizers is alcohol. The alcohol used may be isopropyl alcohol (Isopropanol), ethanol-propanol or povidone-iodine. Alcohol based hand sanitizer are more effective in killing microorganisms. (Hand hygiene., 2006) An alcohol is any organic compound in which the hydroxyl functional group (OH) is bound to a saturated carbon atom. The primary alcohol usually forms the base of hand sanitizer which is about 60%. Hand sanitizers effectiveness starts with its formula. The base of all hand sanitizers is alcohol, added to vitamin E, aloe vera (or another softening ingredient), and glycerine. The essential, and germ killing ingredient in hand sanitizers is the alcohol, and the minimum amount one needs for a sanitizer is 60%. The process of germ killing starts by removing the oil on the skin, the bacteria present in the body from coming to the surface. Then the alcohol kills the bacterial once rubbed over the hands. Hand sanitizers is clearly effective against gastrointestinal and, to a lesser extent, respiratory infections. Alcohol rubs also helps, to kill many different kinds of bacteria and TB bacteria. These herbal produces is clearly

having many hidden medicinal values. Isopropyl alcohol kills or prevents the growth of bacteria on the skin. Moreover, Antidote to poison, as well as an anti-arthritic, anti-rheumatic, antibacterial, anti-fungal, insecticidal, sedative, digestive, anti-epileptic, and anti-hysterical substance. Hence, Aloe Vera have a calming effect on the skin and have been shown to help reduce itchiness and inflammation. Furthermore, The natural moisturizing properties of neem powder help in treating skin dryness by nourishing the skin cells and for restoring the skin pH balance. Whereas, Lemongrass is used as a natural remedy to heal wounds and help prevent infection. Moreover, Green tea can also have anti-aging effects on the skin when applied topically.

## 2. LITERATURE REVIEW

**Nandkishor S.Wani, ( 2013 ): Formulation And Evaluation Of Herbal Sanitizer.** Hand hygiene is a vital principle and exercise in the prevention, control, and reduction of health care-acquired infections. Right hand washing and drying methods stop the chain of transmission of deadly pathogens from hands to other parts of the body. Hand Sanitization is the preeminent aid in preventing nosocomial infections caused by different opportunistic microorganisms and to get this the use of hand sanitizer becomes a must in recent circumstances. **David R. Macinga, PhD ( 2013 ):** Hand Sanitizer Activities: A Review; Hand Sanitizers reduce the microbial load on hands without the need for soap and water. They are an important tool to help reduce the spread of illness-causing microorganisms and are useful as an adjunct to hand-washing. In settings such as health care environments, alcohol-based hand sanitizer is the preferred and recommended method of hand hygiene when the hands are not visibly soiled.

## 3. METHODOLOGY

Using 4 fresh herbal ingredients. 1 ltr water, 1 ltr blended aloe vera liquid 10 gram alum, 10 pcs champhor. Blend the aloe vera without water. Boil the water and add neem leaves into the boiled water. Let the water boil well. Add the aloe vera liquid gel into the boiled water and mix it well. Add the 10 gram alum and mix it. Add 10 pcs champhor into the water and wait until the water boils well. Finally, our VALLAVAN herbal hand sanitizer is ready and fill in the bottle

### Usage

Use herbal hand sanitizer wash everyday to protect hands from germs including bacteria and flu virus and helps keep them hygienically clean.

For external use only

Store below 30°C

## 4. RESULTS & DISCUSSION

### Lab Test Results and Finding

The procedure for preparing the inoculum of organisms is as follows at  $10^8$  cfu/ml.

- l. Escherichia coli ATCC8739
- m. Staphylococcus aureus ATCC6538
- n. Pseudomonas aeruginosa ATCC9027
- o. Aspergillus niger ATCC16404
- p. Candida albicans ATCC10231

q. *Listeria monocytogenes* ATCC13932

There are few Lab test has done to verify content in the soap.

a. Bacteriological Analysis

Bacteriological analysis is a method of analysing water to estimate the numbers of bacteria present and, if needed, to find out what sort of bacteria they are. It represents one aspect of water quality. It is a microbiological analytical procedure which uses samples of water and from these samples determines the concentration of bacteria.

b. Microbiological Analysis

**Microbiological analysis** covers the use of biological, biochemical or chemical methods for the detection, identification or enumeration of microorganisms. It is often applied to disease causing and spoilage microorganisms

<u>CERTIFICATE OF ANALYSIS</u>				
Company : SJKT Jenjarom 291, Lorong Kanan 17, Kampung Sungai Jarom., 42600 Jenjarom, Selangor.			Lab No. : PJ-D/MS/144921	
			Page : 2 of 2	
Sample Marking	:	Vallavan Herbal Hand Sanitizer		
Date Sample Received	:	20 <sup>th</sup> May 2021		
Date Analyzed	:	20 <sup>th</sup> May 2021 - 25 <sup>th</sup> May 2021		
Date Reported	:	25 <sup>th</sup> May 2021		
<b>MICROBIOLOGICAL ANALYSIS:</b>				
<u>Challenge Test</u>				
<b>RESULTS:</b>				
Organism Tested	Initial Count, cfu/ml (A)	Contact Time	Organism Survive, cfu/ml (Sample B)	Percentage of kill, $\frac{(A)-(Sample B)}{(A)} \times 100\%$ (A)
a) <i>Escherichia coli</i> ATCC 8739	$2.8 \times 10^7$	5 min	0	>99.999%
b) <i>Staphylococcus aureus</i> ATCC 6538	$1.6 \times 10^7$	5 min	0	>99.999%
c) <i>Pseudomonas aeruginosa</i> ATCC 9027	$1.2 \times 10^7$	5 min	$1.5 \times 10^5$	98.750%
d) <i>Candida albicans</i> ATCC 10231	$1.6 \times 10^7$	5 min	0	>99.999%
e) <i>Aspergillus niger</i> ATCC 16404	$1.3 \times 10^7$	5 min	$9.0 \times 10^5$	93.077%
f) <i>Listeria monocytogenes</i> ATCC 13932	$8.8 \times 10^7$	5 min	$6.1 \times 10^6$	93.068%
Test Method : In-House Method based on United States Pharmacopoeia 28				

<b>CERTIFICATE OF ANALYSIS</b>		
Company :	SIKT Jenjarom 291, Lorong Karan 17, Kampung Sungai Jarom, 42600 Jenjarom, Selangor.	Lab No. : PJ-D/MS/1449/21
		Page : 1 of 2
Sample Description :	One (1) sample of Sanitizer	
Sample Marking :	Vallavan Herbal Hand Sanitizer	
Date Sample Received :	29 <sup>th</sup> May 2021	
Date Analyzed :	29 <sup>th</sup> May 2021 - 25 <sup>th</sup> May 2021	
Date Reported :	25 <sup>th</sup> May 2021	
<b>BACTERIOLOGICAL ANALYSIS:</b>		
<b>Procedure:</b>	<b>Challenge Test</b>	
1)	Prepare inoculum of organism below at 10 <sup>8</sup> cfa/ml.	
	a) <i>Escherichia coli</i> ATCC 8739	
	b) <i>Staphylococcus aureus</i> ATCC 6538	
	c) <i>Parasitomonas oryzae</i> ATCC 9027	
	d) <i>Aspergillus niger</i> ATCC 16404	
	e) <i>Candida albicans</i> ATCC 10231	
	f) <i>Listeria monocytogenes</i> ATCC 13932	
2)	Prepare the sample into six (6) portions by transferring 9 ml of sample and inoculate 1 ml of each inoculum above into product respectively and shake vigorously and allow it to contact for 5 minutes.	
3)	Proceed with serial dilution by transferring 1 ml from 1:10 dilution into 9 ml sterile saline up to necessary dilution.	
4)	Pipette 1 ml of each dilution into duplicate plates for both 30 min and 24 hour respectively.	
5)	Pour approximately 15-20 ml of Tryptic Soy Agar (Bacteria) into all plates and allow it to solidify.	
6)	Incubate all plates at 35°C for 48 hours (Bacteria), count the colonies observed after completion of incubation.	
7)	Initial count for each inoculum was also recovered.	
8)	Calculate the percentage of kill for all organisms as follows :	
	$\frac{\text{Initial Count} - \text{Count of organisms survive}}{\text{Initial Count}} \times 100\%$	

## 5. CONCLUSION

In conclusion, hand sanitizer was produced to solve the problems faced from the action of germs, bacterial and viral infections. It can quickly reduce the number of microbes on hand. The use of alcohol hand sanitizer enhance hand hygiene programs due to their ease and convenience of using in conjunction with plain or antimicrobial soaps and water thereby increasing hand hygiene compliance level. We hope this Vallavan herbal hand sanitizer can benefit everyone and prevent ourselves from this covid pandemic 19.

## RECOMMENDATION

The benefit of Vallavan Herbal hand sanitizer is

- a. 99.9% germs protection
- b. 100% natural ingredients
- c. PH balanced
- d. Prevents skin infections
- e. Natural freshness
- f. Natural Moisturizer and
- g. Maintain the skin's natural texture.

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