spray based on natural extracts and Ethoxylated Alcohol. The findings of this study show that a ready-to-use pre-cleaning-disinfecting spray is extremely important in reducing the possible transmission of all microorganisms.

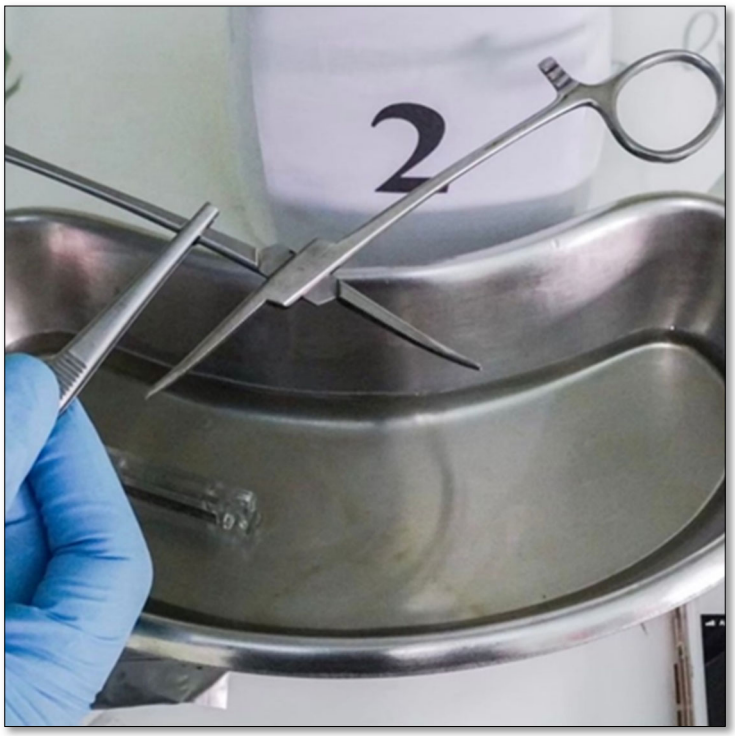

Figure 1. Prepare a sample for a simple visual observation test.

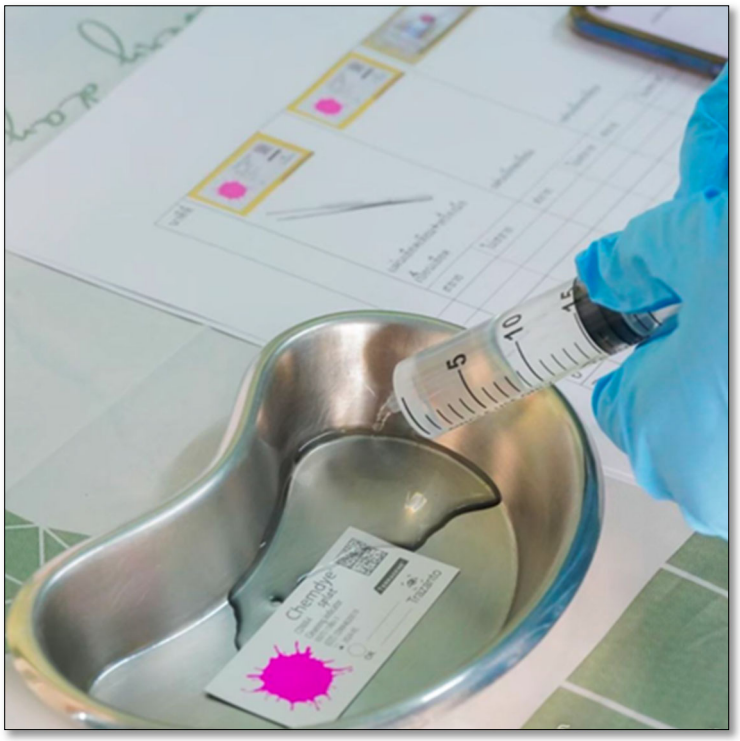

Figure 2. Prepare a sample for a test strip observation test.

Figure 3. The result of a simple visual observation test in 1 min.

Figure 4. The result of a test strip observation test in 2 min.

Table 1. The efficiency test results of microorganisms.

Test organisms	Bacterial growth after exposure of 60 contaminated carriers to disinfectant at	
	Dilution	10 min
Staphylococcus aureus (ATCC 6538)	1: 15	0/60
Salmonella choleraesuis (ATCC 10708)		0/60
Pseudomonas aeruginosa (ATCC 15442)		0/60
**Trichophyton mentagrophytes*	1: 10	0/60

**T. mentagrophytes is a clinical isolate. The strain sporulates freely on culture media and produces abundant conidia as required by AOAC Official Method 955.17, AOAC International 2000.*

Table 2. The efficiency test results of fungicidal.

Pathogens	Minimal inhibition concentration (MIC)	Minimum bactericidal concentration (MBC)
C. albicans ATCC 90028	10%	10%
C. neoformans	10%	10%

DISCUSSION

The effective pre-cleaning and disinfection sprays containing extracts from Thai agricultural products with Ethoxylated Alcohol active ingredients were high efficiencies in simultaneously cleaning, disinfecting, and removing blood stains remover on medical devices. The results of a simple visual and blood stains test strip show effective blood stain dissolution efficiency from 2 min onwards. This is in line with the study of Withaya which found that the pre-cleaning spray on blood stain remover was better than the pre-cleaning foam [1,5,6]. Thai Mangosteen extracted with Ethoxylated Alcohol active ingredients can inhibit the growth of *Staphylococcus aureus* (ATCC 6538), *Salmonella choleraesuis* (ATCC 10708) *Pseudomonas aeruginosa* (ATCC 15442). Most of the mangosteen extracted contains the main compound, Xanthones (more than 40 %), which is the core structure of Mangostin. Xanthones are reported to inhibit mold [7-10]. According to a study by Yenjit et al, Xanthones have been reported to inhibit fungi. Many species such as *Rhizopus sp, Alternaria solani, Aspergillus niger, Aspergillus flavus, Penicillium sp, Fusarium roseum,* etc. Mangosteen extract found that many bioactive compounds such as flavonoids, xanthones, and mangiferin, among others, are classified as substances that increase plant resistance and inhibit the growth of microorganisms [9,11,12]. It has also been studied which is consistent with the Sabahat study decoction and essential oil of clove (*Syzygium aromaticum* (L.) Merrill.& Perry) as natural antibacterial agents against 100 isolates belonging to 10 different species of *Gram–ve bacilli viz*, *Escherichia coli*, *Proteus mirabilis*, *Pseudomonas aeruginosa*, *Enterobacter aerogenes*, *Klebsiella ozaena*, *Klebsiella pneumonia*, *Serratia marcescens*, *Salmonella typhi*, *Shigella dysentriae* and *Vibrio cholerae* [7,12-16]. In a study carried out extracts from Thai agricultural products with Ethoxylated Alcohol active ingredients extract showed an inhibitory effect against microbial burden and blood stains remover on medical devices [17-20].

CONCLUSIONS

The findings of this study show that the effectiveness of pre-cleaning and disinfection sprays against the microbial burden and blood stains remover on medical devices containing extracts from Thai agricultural products simultaneously cleaning, disinfecting, and removing blood stains on medical devices extremely important in reducing the possible transmission of all microorganisms. The cleaning-disinfecting sprays, with ingredients from natural extracts, can remove blood stains. Instrument pre-cleaning and disinfection sprays of natural extract and Ethoxylated Alcohol showed comparable effectiveness.

LIMITATIONS OF THE STUDY

This study had some limitations due to recovery factors that may lead to a remover of blood strains in medical devices of CSSDs, such as contact time, the technique of measurement, and procedure activities. The multi-center Central Sterile Supply Department was recruited from 5 hospitals which is still a small sample. In addition, such studies have not been studied at the European Standard.

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