

Antiseptic Gel from Bacterial Consortium in the Digestion System of Sea Cucumber

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ABSTRACT

This article aims to describe the antiseptic gel consortium of bacteria from the digestion of sea cucumbers. Sea cucumbers are known to contain saponin, tannin, flavanoid, terpenoid and steroid compounds. Some types of bacteria filled with sea cucumbers are known to produce antibacterial substances against Multi Drug Resistant (MDR) bacteria. If several types of bacteria merge and work together, a consortium of 2 bacteria with higher potential as antibacterial will form because synergistic bacteria produce higher remodeling efficiency during the processing process. Natural products of bacteria filled with sea cucumbers have no side effects so its ability can be developed as an alternative antiseptic ingredient to kill germs on the skin.

Keywords: Antiseptic; Bacterial; Natural product; Consortium; Sea cucumber stomach

INTRODUCTION

Sea cucumber has potential as an antibacterial agent and this can be developed for alternative antiseptic applications to kill dermatological pathogenic microbes. However, the direct utilization of this potential is not considered conservative. Therefore, this research on the viable application of sea cucumber symbiont bacteria was carried out. A number of bioactive compounds obtained from invertebrates are assumed to be produced by the microorganisms associated with them. This proves that the compounds produced by the symbiont bacteria are the same as the compounds in their host, and therefore the use of the symbiont bacteria to obtain antibacterial compounds as hand sanitizer gels is a conservative action and can be an alternative natural resource in antiseptic applications. Antiseptics are substances that inhibit growth or kill bacteria. Here we will describe the use of bacteria as an antiseptic agent. The antiseptic is static, which only interferes with the growth of pathogenic bacteria by inhibiting the work of enzymes, cell wall synthesis, and synthesis of nucleic acids and proteins, and reducing cell wall permeability [1].

DISCUSSION

The content of antibacterial compounds in sea cucumbers is quite potential, but up to this point most of the production and catch in Indonesia has only been processed into dried sea cucumbers and exported to various countries. The extract processing industry into supplements or nutraceutical ingredients does not exist in Indonesia, even though the added value obtained is higher than the economic value of dried sea cucumbers. Meanwhile, sea cucumber extract products that are used as food supplements or nutraceuticals are still imported from Malaysia and America. In fact, the demand for sea cucumber extract is quite high and the sales volume of these products has increased every year since sea cucumber nutraceutical products have been marketed in Indonesia [2]. Given this market opportunity, the pharmaceutical industry which processes these products should be pursued in Indonesia. On the other hand, the use of alcohol-based antiseptics poses its own issues, because in addition to being flammable, it can also cause dryness and irritation of the skin [3]. There needs to be an alternative material that can be a substitute for alcohol as an antiseptic. Some of these reasons are of urgency for biochemical assays on sea cucumber symbionts as a conservative measure in the use of their compounds.

The results of the identification of secondary metabolites in sea cucumber extracts showed that the symbiont bacteria of sea cucumbers had potential antibacterial compounds, as reported by and proven to inhibit the growth of MDR pathogenic bacteria, namely the extract of the bacteria *Bacillus toyonensis*, *Bacillus aquimaris*, *Bacillus maritimus* and *Vibrio chiguensis* [4]. This means that the extract content

of the sea cucumber consortium bacteria can be used as a natural antiseptic source. Each of these bacterial species has the potential as antibacterial microbes. If there are several types of bacteria in synergy and symbiosis, a bacterial consortium will be formed whose potential, in this case as an antibacterial agent, will be better. The synergy between the bacteria in the consortium results in a higher breakdown efficiency during the processing phase. The symbiont bacteria found in the stomach of sea cucumbers have been shown to be bactericidal against Multi-Drug Resistant (MDR) bacterial species and the compounds they produce have the potential to be an ingredient in hand sanitizer or antiseptic products [4].

Triclosan is a phenol group compound used in antiseptic gel preparations. This compound has advantages compared to alcohol in that triclosan is less corrosive, so the use of natural-sourced antiseptics, namely compounds from the sea cucumber symbiont bacteria is one of the promising potential health care applications [5].

CONCLUSION

The consortium of several types of bacteria has a compounding effect on its antibacterial activity, which were found to be higher due to the synergy of each microbial species activity in the consortium. The synergy between the bacteria in the consortium results in a higher breakdown efficiency during the processing phase. Therefore, the consortium of symbiont bacteria in the digestive system of sea cucumbers is useful as a natural resource in organic-based antiseptic production.

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