



# A colorful ethanol disinfectant to combat COVID-19- 19-Our attempt to create a "Giant Emulsion"-

Takuya, Yamashina<sup>1</sup>; Miyuki, Saito<sup>1</sup>; Kazuhiro, Shiga<sup>1</sup>; Ryo, Murakami<sup>2</sup>  
<sup>1</sup> Skin Science Development Institute, Mandom Corp, Tokyo, Japan; <sup>2</sup> Department of Chemistry, Konan University, Hyogo, Japan

POSTER ID  
362

## Introduction:

With the advent of COVID-19, hygiene awareness has increased, and the importance of emulsification technology in high ethanol concentrations, which can achieve both disinfection and moisturization, is gaining attention. We have found that by using the powder emulsification method, it is possible to stably prepare an emulsion of a visible size even in high-concentration ethanol, without coalescing, and it is possible to prepare a formulation in which colorful capsules with bright appearance are suspended.

## Materials & Methods:

- [Emulsion]  
 Powder: Aluminum Starch Octenylsuccinate  
 Oil: Squalane (colored as appropriate)  
 [External phase] 70 wt% ethanol solution  
 [Evaluation]
- Water content of the stratum corneum (N=6): Measured with a Corneometer CM825
  - Disinfecting capability: Staphylococcus aureus NBRC13276 and Escherichia coli NBRC 3972 were evaluated by TIME-KILLtest
  - Usability (N=6): Evaluation descriptors were "sticky," "slimy," "powdery," "refreshing" and "moist,"
  - Emotional response to use (N=6): To evaluate emotional changes during use, a self-reported questionnaire was used to measure the Japanese version of positive emotions (PA) and negative emotions (NA) (PANAS) [1]

## Conclusions:

Giant emulsions (150µm) prepared in high ethanol concentration has high bactericidal power and moisturizing effect, and increases the feeling of powdery and moist and positive emotions when used. We believe that this technology will also be useful as a practical approach to cosmetics development in the post-COVID-19 world.

## Results & Discussion:

### Sample appearance / microscope image / particle size

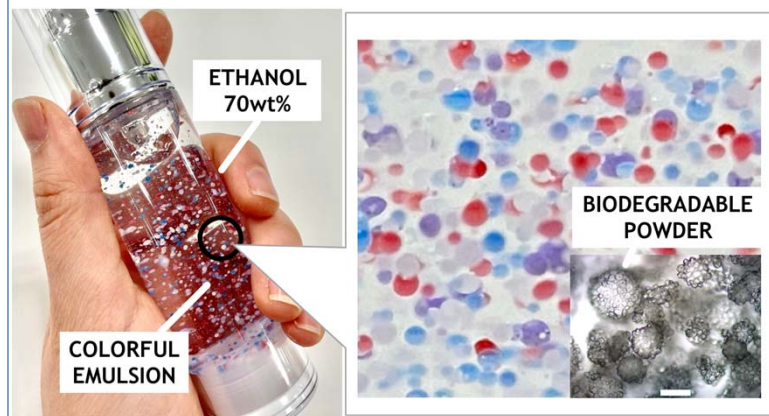


Fig.1 Colorful appearance of the emulsion and optical microscope image (scale bar is 100µm).

It breaks easily by crushing with the palm of the hand, and left no agglomerates, which is a desirable property

## Usability

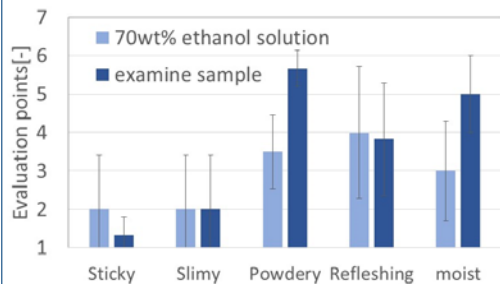


Fig.2 Sensory evaluation result of usability of prescription C1 (Mean±S.D. \*P<0.01 \*\*P<0.05)

Subjects reported significant smooth feeling ( $P = 0.001$ ) and moist feeling ( $P = 0.020$ ) after application

## Moisturizing function

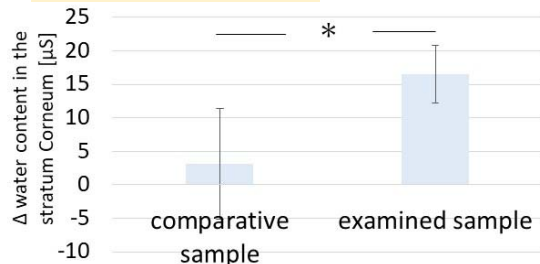


Fig.4 Water content of the stratum corneum after continuous use or control for 2 weeks (Mean±S.D. \*P<0.01).

Significant increase in water content of the stratum corneum as compared to the comparative sample that is without emulsion ( $P = 0.09$ ).

## Disinfecting capability

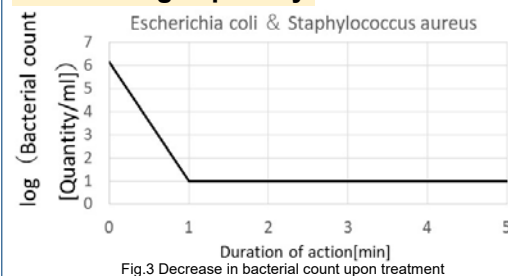


Fig.3 Decrease in bacterial count upon treatment

It was found that 99.99 % of the bacteria were terminated within 1 minute in both cases

## Emotional response to use

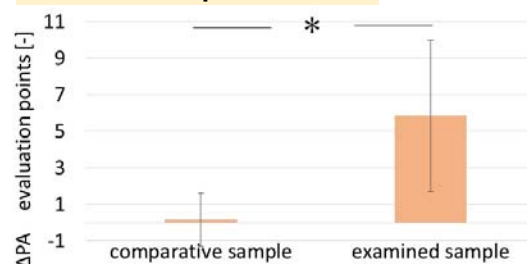


Fig.5 Overall score evaluation result of positive items at the time of use (Mean±S.D. \*P<0.05)

On the total score of items was compared between the use of the mined sample and comparative sample is without emulsion, examined sample rated significantly higher ( $P = 0.022$ )

## References:

- [1] Atsushi Sato and Asako Yasuda (2001) Creation of Japanese version of PANAS Personality Psychology Research 9:138-139.