Evaluation the effectiveness of combinative treatment of atmospheric plasma jet and natural product on wound healing

Nasruddin¹,², Tatsuo Ishijima³, Heni Lutfiyati⁴, Isabela Meliawati Sikumbang²,⁴, Eka Sakti Wahyuningsytas²,⁵, Heni Setyawati Esti Rahayu⁵, Toshio Nakatani⁶, Yoshihiko Uesugi³,⁸

¹Department of Medical Laboratory Science, Universitas Muhammadiyah Semarang
²Research Center for Experimental Wound Healing, Universitas Muhammadiyah Magelang
³Research Center for Sustainable Energy and Technology, Kanazawa University
⁴Department of Pharmacy, Universitas Muhammadiyah Magelang
⁵Department of Nursing, Universitas Muhammadiyah Magelang
⁶Division of Nursing, Faculty of Health Sciences, Institute of Medical, Pharmaceutical, and Health Sciences, Kanazawa University, Kanazawa-shi
⁷Muhammadiyah Research Network for Plasma Medicine (M-Plasmed), Semarang
⁸Faculty of Electrical and Computer Engineering, Institute of Science and Engineering, Kanazawa University

e-mail : nasruddin@unimus.ac.id

Abstract

It is well known that both atmospheric plasma jet and natural product has efficacy for wound healing, while plasma activated water (PAW) recently has huge attention in plasma medicine research. This presentation aims to evaluate the effectiveness of combinative treatment of atmospheric plasma jet and aqueous natural products on wound healing using small animal model. Atmospheric plasma jet as described previously¹,² was applied. Several types of natural product in liquid phase, namely Indonesian honey, Manuka honey and *Piper betle* L. leaf extract, were applied. Three main issues were presented here, namely:

1. Effect of combinative treatment of cold plasma jet and Indonesian honey supported microwell dressing on wound healing³.

2. Effect of combinative treatment of plasma jet and *Piper betle* L. leaf extract on wound healing

3. Comparative study on Manuka and Indonesian honeys to support the application of plasma jet during proliferative phase on wound healing³.

As the result, firstly, while this investigation may provide a new insight in how to combine plasma jet and natural product solutions in animal or human models for skin-oriented treatment, generally it was shown that natural products tended to decrease the effectiveness of atmospheric plasma jet for wound healing. In this context, natural products may have role as antioxidant that impede the work of reactive oxygen nitrogen species (RONS) produced by plasma jet. Secondly, regarding the comparative study on Manuka and Indonesian honeys to support the application of plasma jet during proliferative phase on wound healing, Manuka may be better to support plasma jet than Indonesian honey due to its chemical characteristic.

Figure 1. Experimental setup¹

Figure 2. Day of wound healing for a group with combinative treatment of plasma and Indonesian honey (PMWDH) was tended to lower than that of plasma only³.

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References

