## Fabrication of natural material coated on the biodegradable fiber with calcium carbonate for improving hemostatic effect

慶大院理工<sup>1</sup>, 国立江陵原州大学<sup>2</sup>, <sup>0</sup>朴駿容<sup>1</sup>, 慶奎弘<sup>1</sup>, 金世勳<sup>2</sup>, 白鳥世明<sup>1</sup> Grad. Sch. Sci. Tech., Keio Univ.<sup>1</sup>, Dep. Adv. Ceramic material. Eng., Gangneung-Wonju Univ.<sup>2</sup> <sup>O</sup>Jun-Yong Park<sup>1</sup>, Kyu-Hong Kyung<sup>1</sup>, Sae-Hoon Kim<sup>2</sup>, Seimei Shiratori<sup>1</sup> E-mail: shiratori@appi.keio.ac.jp, junyong@a6.keio.jp

Nanofiber has high surface area and high porosity, so it has been investigated for medical applications, like a wound dressing. A wound dressing fabricated by nanofiber has aeration property and acts bacterial barrier more effectively than that fabricated by microfiber. Biopolymers like poly(caprolactone) (PCL), poly(lactic acid) (PLA), poly(glycolic acid) (PGA), and poly(L-lactide-co-glycolide) (PLGA) are suitable as materials of nanofiber wound dressing because they have histocompatibility, biodegradability, and lack of antigenicity for human. Many kinds of biopolymers have been investigated as materials of wound dressing. PCL is biodegradable polymer, which has been studied for wound-management materials since 1970s because of its good ability [1]. Recently, there has been a gradual increase in the use of PCL for biomaterials and tissue engineering [2]. Compared to other biodegradable polymer such as PLA and PGA, PCL has some distinct differences in physical properties for medical applications, low melting temperature, high blend-compatibility, low cost and Food and Drug administration (FDA) approval. Thus, PCL have demonstrated these utility in many fabrication methods including electrospinning. We fabricated PCL fiber and PCL fiber with CaCO<sub>3</sub>. As the result, we coated on the PCL fiber and PCL fiber with  $CaCO_3$  using hemostatic material as  $\beta$ -chitosan via ultrasonic spray method. Furthermore, we compared with PCL fiber and PCL fiber with CaCO<sub>3</sub> for blood coagulation. It was found that the PCL fiber with CaCO<sub>3</sub> has effect on blood coagulations better than PCL fiber without CaCO<sub>3</sub>. The PCL fiber with CaCO<sub>3</sub> can be expected for medical application.



Figure 1. SEM image of (a) PCL fiber (b) PCL fiber with CaCO<sub>3</sub>



Figure 2. Result of blood coagulation test

## References

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