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Appendix

Abstract submitted for the annual conference at Faculty of Medicine,

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Rheological Property of Tapioca Maltodextrin Plasma Expander and Its Effect on Morphology of Red Blood Cells

Surapong Chatpun[1], Ph.D., Kittisak Sawanyawisuth[2], M.D.,Ph.D. and Kuakoon Piyachomkwan[3],Ph.D.

[1]Institute of Biomedical Engineering, Prince of Songkla University, Hatyai, Songkhla 90110

[2] Department of Medicine, Faculty of Medicine, Khon Kaen University, Khon Kaen 40000

[3] National Center for Genetic Engineering and Biotechnology, National Science and Technology Development Agency, Pathumthani 12120

Introduction: Plasma expanders (PEs) are infused fluids given to increase blood volume in case of blood loss. In clinic, hydroxyethyl starch produced from waxy corn starch is an available plasma expander. Alternatively, other sources of starch might be a potential source for plasma expanders such as tapioca starch and potato starch.

Objective: This work aimed to study rheological property of plasma expander prepared from tapioca maltodextrin, a modified tapioca starch, and to investigate its effects on morphology of red blood cells.

Materials and Methods: Two kinds of tapioca maltodextrin were studied, they were tapioca maltodextrin with dextrose equivalent (DE) 1 and 6. Rheological and physicochemical properties were investigated including viscosity, pH, colloid osmotic pressure and turbidity. Mixture of blood and tapioca maltodextrin plasma expander was sampled and morphology of red blood cells was observed with microscopy technique.

Results: The results showed that the degree of DE and concentration of tapioca maltodextrins affected the rheological and physicochemical properties of plasma expanders. PE prepared from 10% w/v tapioca maltodextrin with DE6 (10% DE6) had nearly similar rheological property to 6% hydroxyethyl starch 130/0.4. It was also found that high concentration of tapioca maltodextrin altered a shape of red blood cells, especially 10% DE6. Stability of viscosity for 10%DE6 plasma expander was in an acceptable range.

Conclusion: Tapioca maltodextrin with DE6 can be a candidate for a source of PEs. However, it is still necessary to continually research and investigate the effects of this novel PE in animal models.

Keywords: Tapioca maltodextrin; Plasma expander; Rheological property; Dextrose equivalent