Rizka Nindyasari, 2012, Design of Microcontroller Based-NPWT (Negative Pressure Wound Therapy) to Accelerate Diabetic Ulcer Healing. This thesis was under the guidance of Dr. Retna Apsari, M.Si and Delima Ayu Saraswati, S.T, M.T, Biomedical Engineering, Physics Department, Faculty of Science and Technology, Airlangga University.

ABSTRACT

Design of a microcontroller based-NPWT (Negative Pressure Wound Therapy) to accelerate diabetic ulcer healing has been conducted. This study aimed to design an NPWT device equipped with negative pressure setting as well as therapy duration to absorb diabetic ulcer fluid. In this NPWT device, the negative pressure is regulated by a ballvalve which then is read by the MPX5050DP sensor and processed by the microcontroller. Duration setting of the therapy is also available in this device and is programmed in the microcontroller. In this study, experimental rabbits were used and conditioned to suffer from diabetic ulcers. The therapy performed was a pressure with the magnitude of -75 to -80 mmHg for 5 hours. This device has a high degree of accuracy in absorbing the fluid of diabetic ulcers, the magnitude is 99.5 %, while the therapy duration has a 100 % accuracy.

Keywords : negative pressure wound therapy, NPWT, negative pressure