STUDY OF APPARENT DIFFUSION COEFFICIENT AT MAGNETIC RESONANCE IMAGING FOR PVA HYDROGEL AND ITS CORRELATION WITH CONSISTENCY MEASUREMENT USING PENETROMETER

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Abstract

A preliminary study on Apparent Diffusion Coefficient from PVA hydrogel using Diffusion Weighted Magnetic Resonance Imaging and its correlation with consistency measurement using penetrometer had been done. The lower the ADC value, the lower the water movement within brain matter. For our experiment, we used hydrogel PVA of 10,7 wt, 9 wt, 8,1 wt, and 7 wt during 12 h freezing and 8 h thawing method for 3, 4, and 5 cycle respectively. The ADC value was obtained from Diffusion Weighted Imaging method at MRI with b values of 0, 10, 500, and 1000. The result was correlated with measurement using penetrometer. Three cycles samples couldn’t be correlated because the concentration of samples was too low. Four cycles and five cycles samples respectively had the correlation coefficient value $r = -0,931$ and $r = -0,66$, showing that ADC value has inverse correlation with consistency of the sample.

Keywords : Apparent Diffusion Coefficient, Diffusion Weighted Imaging, PVA hydrogel, penetrometer.