

ABSTRACT

Hydrocephalus is an event when there is an imbalance in the production and circulation of brain fluid which functions to provide buoyancy and protection to the brain and also reduces brain weight. Hydrocephalus requires attention and appropriate treatment, because it can cause serious consequences in the form of motor and sensory deficits, impaired cognitive function, as well as various symptoms up to death. The causes of death are divided into two, namely shunt-related causes and non-shunt-related causes. Shunt-related causes include shunt type and shunt malfunction. The number of deaths due to shunts can be reduced by coating the shunt catheter with a material that aims to prevent blood clots and bacterial infections. This research aims to create a shunt coating material that can reduce the number of infections caused by bacteria and prevent blood clots in hydrocephalus sufferers. This study used chitosan-heparin with variations in chitosan concentration of 0.2%; 1%; and 5%, will be used to line the shunt. The coating process in this research uses the dip-coating method, where the shunt will be dipped into the Chitosan-Heparin liquid that has been made. Researchers used the FTIR test, hemolysis test and antibacterial test to find the optimal concentration of Chitosan-Heparin as a shunt coating material. Based on the characterization results in this study, it shows that variations in the 5% chitosan concentration and variations in the chitosan-heparin layer have great potential for use as antibacterial shunt coating materials seen from their effectiveness as antibacterial materials having an inhibitory zone diameter against E. coli bacteria of 2.6 mm and for S. aureus it was 2.43 mm and in the hemolysis test with a hemolytic index of 0% it was categorized as non-hemolytic.

Keywords: *antibacterial, dip-coating, heparin, hydrocephalus, chitosan, shunt.*