CHAPTER V

CONCLUSION

The preparation method of niacinamide-loaded sericin nanoparticles was successfully developed by water in silicone emulsion technique. The optimum conditions for sericin nanoparticles preparation were 2% of sericin, 8% of calcium chloride, 1000 rpm of homogenizing speed and 15 minutes of homogenizing time. Sericin nanoparticle size at optimum condition was 264.66 ± 9.83 nm. Morphology of sericin nanoparticle was observed using electron scanning microscope and spherical shape of nanoparticle was obtained. The entrapment efficiency and niacinamide loading were 59.41 ± 8.26% and 0.50 ± 0.08%, respectively. Factors that influented entrapment efficiency were amount of niacinamide loading, heating temperature and time. The highest entrapment efficacy was obtained with 0.5% of niaciamide, 15% of acetone, 80°C of heating temperature and 5 hours of heating time. The solidification process was done at high temperature to speed up the water removal rate. The percentage of niacinamide remaining in sericin nanoparticle was higher than 85 after stored at different pH and temperatures. The niacinamide from sericin nanoparticles showed the rapid release. The releasing profile of niacinamide-loaded sericin nanoparticles at pH 7.4 and 5.5 were in similar pattern. The niacinamide was completely released from nanoparticles within 2 hours. *In vitro* skin permeation of niacinamide-loaded sericin nanoparticles was investigated using Franz diffusion cell model. Niacinamide-loaded sericin nanoparticles lotion permeated through human skin more than niacinanide lotion.