Some of oxygenators in extracorporeal membrane oxygenation (ECMO) systems have been demonstrated durability for over 1 week continuous use recently. In this study, we conducted chronic ECMO animal experiment using a membrane oxygenator (BIOCUBE2000), and systematically evaluated the change of thrombus formation due to conditions of anticoagulant therapy and ECMO period by quantifying the thrombus distribution in the oxygenator after ECMO using an image processing. As a result of the area ratios of red thrombus at inlet side, middle of fiber bundle and outlet side were 0.049, 0.001 and 0.013 in the group for 2 weeks without continuous anticoagulation. And, we tried to compare results of the thrombus distributions to numerical analysis for blood flow in the oxygenator. There were similar distributions between observed thrombus in the section images and calculated lower velocity region in the oxygenator.