In this paper, we describe various tests used to determine deviations from the Hardy-Weinberg equilibrium. The tests described are: the exact test, the $\chi^2$ test with and without continuity correction, the conditional $\chi^2$ test with and without continuity correction and the likelihood ratio test. These tests explore the question whether a random sample has trinomic distribution with probabilities $p_{AA} = \theta^2$, $p_{Aa} = 2\theta(1-\theta)$, $p_{aa} = (1-\theta)^2$.
In this work, we simulate data of sample size 100 and we estimate the probability of type I error and the power of the tests. In this case, we get the best results with conditional $\chi^2$ test. The estimate of the power of the likelihood ratio test and the $\chi^2$ test is one of the highest of all. On the other hand, these two test are anticonservative in some cases .