Niemann-Pick type C disease (NPC) is a neurodegenerative disorder caused by accumulation of cholesterol in the cells. Some agents tested in fibroblasts of animals may mimic this disease, the most known is U18666A. The aim of this study was to establish a model of NPC in cultured astrocytes of rats (0-3 days), establishing the best dose of U18666A and incubation time for further biochemical studies. The rats were killed by decapitation. CMF-BSS was used to homogenize the cortex. 100,000 cells were placed in 24-well plates with medium D-MEM, 10% FBS. After 4 hours, the medium was changed and so on 4 on 4 days. The drug was added to cultures on day 15 at concentrations of 0.5, 1 or 2 μg. The cultures were incubated in CO2 incubator at 37 °C for 24, 48 or 72 hours. 24 hours before the end of the incubation time, 0.73μg/100μl LDL was added to each well. For visualization and quantification of cholesterol we used Filippin staining and CellM program for fluorescence microscope. The results showed that after 72 h incubation, cholesterol increased 60% compared to controls (without drug). This increase is more than observed after 48h (35%) and 24h (28%) (p<0.0001 – ANOVA two way). We didn’t observe statistically significant differences among the doses of U18666A used at any incubation time (p>0.05). U18666A mimicked the accumulation of cholesterol observed in the patients with NPC already after 24 hours of incubation. Lower doses should be considered in order to establish the optimal dose.