Objectives: To evaluate the activity of the genes ESR1, ESR2, Bcl2, VEGF and MKI67 in the uterus of rats treated with 17ß-estradiol (5?g/Kg) or genistein (50mg/Kg) after castration. Methods: Were used 60 adult castrated rats divided into six groups: GI = received vehicle (propylene glycol); immediately after castration; GII = received genistein immediately after castration; GIII = received genistein 30 days after castration; GIV = received only the vehicle after 30 days of castration; GV = received 17ß-estradiol immediately after castration; GVI = received 17ß-estradiol after 30 days of castration. Drugs were administered by gavage (0.5 ml) for 30 consecutive days, and after the last administration, the animals were anesthetized and the uteri were removed. One of the uterine horns was dipped in liquid nitrogen for gene expression analysis by qRT-PCR, and the other horn was fixed in 10% formalin for histological processing. Sections were stained by hematoxylin and eosin or subjected to immunohistochemistry for evaluation of VEGF-A (vascular growth factor) and Ki-67 (cell proliferation). The analysis of gene expression by quantitative PCR was performed on a custom plate to the signaling pathway of estrogen. Results: We observed an increased thickness of the uterine epithelium and the number of glands, as well as the reactivity of VEGF-A and cell proliferation (Ki-67) in the uteri of animals belonging to GII, GIII, GV and GVI. groups Quantitative PCR assay showed a greater amount of genes expressed in the groups treated with estrogens or genistein (GV = GVI> = GIII GII> GI = GIV, p<0.05). Regarding the antiapoptotic process (Bcl2) we observed greater reactivity in the groups GVI> GV> GIII (p<0.05). In gene expression of ESR1 and ESR2 (alpha and beta) we noticed an increase of both types, with a higher alpha type in GV and GVI groups. Conclusion: Our data suggest that the longer the time castration greater the gene inactivity, and that genistein and estrogens have beneficial effects on the uterus of rats.