ERKs are serine threonine kinases which belong to the kinase proteins superfamily activated by mitogens (MAPK). ERKs 1 and 2 are also known as p44 and p42. Objective: evaluate immunoexpression of the kinase protein regulated by extracellular signs (ERK2) in female rats ovary after melatonin treatment. ERK is the enzyme involved with cellular proliferation. Methods: Thirty female rats (Rattus norvegicus albinus), adult, virgin from Universidade de São Paulo - Escola Paulista de Medicina (UNIFESP/EPM) biotery were separated in three groups of 10 animals each: GI - Sham (falsely pinealectomized) received vehicle; GII - pinealectomized who received vehicle; GIII - pinealectomized with melatonin reposition (10µg/night, each animal) for 60 consecutive days. After this period, animals were anesthetized and ovaries were collected, fixed in 10% buffered formaldehyde and processed for paraffin embedding. From the paraffin blocks, 5µm thick sections were collected to silanized slides and submitted to immunohistochemistry for ERK2 detection. Images were obtained using a light microscope (Axiolab Standard 2.0 - Carl Zeiss) attached to a high definition camera (AxioCam MRC - Carl Zeiss) and by the image analyzing image (AxioVision Rel. 4.8.2 - Carl Zeiss). Reaction expression was analyzed and quantified according with the color intensity with the aid of the Image J Pro Plus, having photographed 5 fields each slide, with the 40x objective. Obtained data was submitted to statistical analysis using ANOVA test complemented by the Tukey-Kramer test (p<0.05). Results: Histological sections submitted to ERK2 immunoexpression displayed increased expression in pinealectomized group (GII = 227.74±5.90*) compared to Sham group (GI = 161.81±4.06) and pinealectomized treated with melatonin (GIII = 178.88±8.90) (*p<0.05). Conclusion: Our data showed that melatonin interferes in the proliferative activity of female rats ovary.