Introduction: Endometriosis (EM) is an estrogen dependent chronic inflammatory disease, affecting 15-20% of women in reproductive age. One of the main symptoms is chronic pelvic pain. An imbalance of sensory and sympathetic nerve fibers (NF) close to the lesions is involved in the chronic inflammatory condition of EM, with a preponderance of proinflammatory and a depletion of antiinflammatory neurotransmitters. The pain severity does not correlate with the chronic inflammation, suggesting the involvement of other mediators in the pain mediation in EM.

The cannabinoid receptor 1 (CB1) is mainly expressed in the nervous system and is involved in the reduction of pain. This study analyses dysfunctions in the expression of the CB1 in neural cells after incubation with peritoneal fluid (PF) of women with EM.

Methods: Neural PC12 or F11 cells were incubated with 20 PF from women with EM and 20 PF from women without EM (CG). After 120 h, the relative CB1 RNA-expression was analysed in the different groups using qRT-PCR.

Results: PC12 and F11 cells incubated with PF from the CG did not show any differences between the symptomatic and the asymptomatic group (p>.05), while the PC12 and F11 cells incubated with PF from women with severe pelvic pain showed a significant upregulation of CB1 compared to the PF from women with EM and no to minimal pain or to the CG (p.<.05).

Conclusion: The cannabinoid system plays a crucial role in inflammation, promoting anti-inflammatory and antinociceptive effects in the peripheral and in the central nervous system. The presence of the CB1 in two neural cell lines was demonstrated; CB1 was upregulated in cells incubated with PF from women with EM. PF from symptomatic women with EM evoked a pronounced upregulation, suggesting a disturbed cannabinoid system in EM, which might contribute to the proinflammatory stage of the EM.