
oid receptor type2 (CB2) evaluated in adult and pediatric brain tumors Tumor Immunoreactivity score (CB2) Tumor grade I II III IV
Adult (n=20) Negative - - - - Low — 2a 1 Moderate 2b 2c 3d 2 High — 17 Pediatric (n=25) Negative - - - 3e Low 2f — Moderate 6
2g 3h - High 2 - 4i 3
All cases were classified into groups according to diagnosed WHO

Distinctive pattern of cannabinoid receptor type II (CB2) expression in adult and pediatric brain tumors.

The efficacy of cannabinoids against high-grade glioma in animal models, mediated by two specific receptors, CB1 and CB2, raised promises for targeted treatment of the most frequent and malignant primary brain tumors. Unlike the abundantly expressed CB1, the CB2 receptor shows a restricted distribution in normal brain. Although brain tumors constitute the second most common malignancy in children and the prevalence of histological types of brain tumors vary significantly between the adult and pediatric populations, cannabinoid receptor expression in pediatric tumors remains unknown. In the present study, we compared the expression of the CB2 receptor in paraffin-embedded sections from primary brain tumors of adult and pediatric patients. Most glioblastomas expressed very high levels of CB2 receptors and the expression correlated with tumor grade. Interestingly, some benign pediatric astrocytic tumors, such as subependymal giant cell astrocytoma (SEGA), which may occasionally cause mortality owing to progressive growth, also displayed high CB2 immunoreactivity. The high levels of CB2 expression would predestine those tumors to be vulnerable to cannabinoid treatment. In contrast, all examined cases of embryonal tumors (medulloblastoma and S-PNET), the most frequently diagnosed malignant brain tumors in childhood, showed no or trace CB2 immunoreactivity. Our results suggest that the CB2 receptor expression depends primarily on the histopathological origin of the brain tumor cells and differentiation state, reflecting the tumor grade.