Characterization of serotonin transporter expression in human T lymphocytes

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Serotonin transporter (SERT) expression has been demonstrated in human lymphocytes, including B lymphocytes, NK cells and other immune cells. However, discussion remains on whether human T lymphocytes express SERT. Given the potentially important role of serotonin in lymphocyte activation and proliferation, we investigated SERT expression in purified human T lymphocytes both in resting and activated state. Blood samples were collected from 9 healthy volunteers. PBMCs were isolated using Ficoll density centrifugation and T lymphocytes were further purified with magnetic activated cell sorting. T cells were either processed for mRNA and protein isolation immediately, or activated using anti-CD3/CD28 coated magnetic beads and allowed to proliferate for 72h at 37°C and 5% CO_2. SERT mRNA expression was measured using droplet digital PCR to allow for increased sensitivity in comparison with qRT-PCR. SERT protein was detected on western blot. SERT expression was detected both on mRNA and protein level, although expression levels were very low. On mRNA level, SERT was expressed in both resting and activated cells. On the protein level however, only activated cells displayed SERT expression. This observation might point to a 'translational readiness' were resting T lymphocytes already produce SERT mRNA, but translation is only induced after activation of the cell.