Interaction of Osp94, a hypertonic stress sensitive molecular chaperone, with mRNAs of tau alternative splicing variants

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In our previous studies, we reported the decreased microtubule transport velocity and mRNA level of 3R-tau, an alternative splicing variants of tau, in molecular chaperone Osp94 (Osmotic stress protein 94 kD)-knocked down Neuro2a cells. To clarify the function of Osp94 in neuronal cells, we investigated an interaction of Osp94 with 4R- and 3R-tau mRNAs of tau alternative splicing variants. In Osp94-siRNA treated Neuro2a cells, 4R-/3R-tau mRNAs and its proteins expressions were analyzed by Real-time PCR and Western blotting, respectively. Additionally, RNA immunoprecipitation were used for demonstrating an interaction of Osp94 with 4R-and/or 3R-tau mRNAs. Real-time PCR and Western blotting revealed marked decreases in 3R-tau mRNA and protein in cells exposed to Osp94-siRNA for 72 h. RNA immunoprecipitation using anti-Osp94 antibody showed amplified PCR products derived from 4R-and 3R-tau mRNAs in nuclear and cytosol fractions. No obvious difference in the ratio of 4R-tau/3R-tau mRNAs bound to Osp94 protein was observed between nuclear and cytosol fractions. The present study indicates that molecular chaperon Osp94 binds to 4R-tau and 3R-tau mRNAs in nucleus and cytoplasm of Neuro2a cells.