

Abstract

Location and translocation in distinct cell lines

CCCTC-binding factor (CTCF) is a versatile zinc finger protein with diverse regulatory functions such as cell growth, differentiation, apoptosis, enhancer-blocking activity and control of imprinted genes. The present work is aimed to clarify the contribution of poly(ADP-ribosylation) in CTCF regulation. CTCF is expressed in various isoforms, with two prominent bands at 130 kDa and 180 kDa in Raji, ARO, NPA and HeLa tumour cells untreated or treated with sodium butyrate. In particular, the latter band at 180 kDa represents a poly(ADP-ribosyl)ated isoform of CTCF which is significantly evident in all treated tumour cell lines. CTCF is usually localized in the nucleus and its subcellular distribution during the cell cycle is dynamic. Redistribution of CTCF in the nucleus may be important to trigger and sustain necessary metabolic changes leading to cell growth arrest and, further, to terminal differentiation and apoptosis. We demonstrated that CTCF was present all over the nuclei in untreated Raji cells, whereas CTCF is also concentrated in the nucleoli in treated ones. Translocation of CTCF was not evidenced in treated thyroid tumour and HeLa cells and was distributed in the cytosol, predominantly concentrated at the nuclear periphery in both untreated and treated ARO and NPA cells. Our preliminary data suggest that CTCF migrates in nucleoli through a poly(ADP-ribosylation)-dependent mechanism in Raji cells, but more experiments are needed further to elucidate this phenomenon.