TRYPANOSOMA CRUZI HISTONE H4 IS ACETYLATED AT SPECIFIC LYSINES AFTER DNA DAMAGE

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Histone tails provide sites for a variety of post-translational modifications that are involved in the control of gene expression, replication, chromatin assembly and DNA repair. In *Trypanosoma cruzi*, the agent of Chagas´ disease, both histones and the control of gene expression are highly divergent compared to most eukaryotes. We have previously shown by mass spectrometry analysis that histone H4 lysine residues 4, 10, and 14 are acetylated. Antibodies against these acetylated lysines were produced and used here to show that lysines 4, 10 and 14 acetylation is maintained at different life stages of the parasite. As distinct transcriptional properties are characteristic of these stages, K4, K10 and K14 acetylations are not proportional to the transcriptional state. Acetylation is proportional to histone H4 amounts during the G1, S, G2 and mitosis indicating that they occur during parasite replication. Only, a modest increase in K10/K14 acetylation is observed during G2/mitosis. In contrast, these latter residues are largely acetylated 6 hours after gamma irradiation, while K4 acetylation is significantly reduced. Maximal K10/14 acetylation levels occur 48 hours after irradiation, decreasing when the parasite starts to replicate. No increase in acetylation occurs after hydrogen peroxide or ultraviolet exposure, suggesting that specific histone H4 acetylations occur during double strand break DNA repair.

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