Epstein-Barr Virus LMP-1 Elevates HIF-1α Gene Transcription in Nasopharyngeal Carcinoma Cells

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Hypoxia inducible factor-1 (HIF-1) is a transcriptional factor composed of a constitutive expressed β and an oxygen-dependent α subunit, which plays a pivotal role in carcinogenesis and metastases. Accumulating evidences reveal elevated expression of HIF-1α in various tumors, including nasopharyngeal carcinoma (NPC). However, the expression mechanism is still unclear. Here, we showed that transactivation activity of HIF-1 was remarkably induced by Epstein-Barr virus (EBV) oncoprotein, latent membrane protein 1 (LMP1), via up-regulated α gene expression in NPC cells. Upon LMP1 induction, we also displayed enhanced promoter activity as well as RNA stability of HIF-1α gene though CTARs (C-terminal of activation regions) of LMP1. Taken together, our data suggest an alternative pathway of HIF-1α regulation by viral protein under normoxic condition. The detail mechanisms should be further investigated.