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Unfolding the molecular and structural role of the viral ubiquitin ligase: ICP0

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Viral factors are known to utilize the cellular machinery of infected host to evade detection from anti-viral responses. Recent research has shown that post-translational modifications including ubiquitin-like modifications also play a key role in this process. Infected cell protein 0 (ICP0), a RING (Really Interesting New Genes) ubiquitin ligase, encoded by the Herpes simplex virus -1 plays an antagonist role in the component of host intrinsic immunity like PML/ ND10 bodies. ICP0 protein (775 amino acid, ¬110 kDa), ICP0-R (ICP0 RING domain), ICP0 RS43 [RING domain and SUMO (Small ubiquitin like modifier) interacting motif 4] domain was over expressed in soluble form in different systems. These purified proteins showed ubiquitin ligase activity in vitro. Moreover, ICP0-RS43 ubiquitinates on the top of SUMO-2 chains and hence it is a bona fide Sumo Targeted Ubiquitin ligase. The CD structure of recombinant ND10 localization domain was also determined. Characterization of the post-translational modifications of full length ICP0 as well as interaction studies would be helpful to understand the host pathogen interactions and lead to a development of potential anti viral drug in future to restrict emergence of the virus.

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