

P004 Coxsackie virus entry and spread in HeLa cells is aided by microvesicle release

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Microvesicles (MVs) released from plasma membrane expressing surface phosphatidylserine and ranging from 200 - 1000 nm in diameter are reported to carry various membrane proteins, lipids and cytoplasmic components characteristic of the parental cell. Coxsackievirus B (CVB), a member of the enterovirus family is the main cause of meningitis and encephalitis in infants which may result in neurodevelopmental defects. Calpains are calcium-dependant cysteine proteases that degrade cytoplasmic and cytoskeletal proteins. They regulate a variety of actin-dependant cellular processes such as microvesiculation. CVB1 requires calpain activation for both entry and virus replication. Here, we show that knocking down calpain expression, using approaches such as small interfering RNA (siRNA), culminates in reduction of MV release, as we have shown previously with another intracellular pathogen, the protozoan parasite, *Trypanosoma cruzi*. The reduction in MV release then abrogates CVB1 entry and spread in HeLa cells. The calpain inhibitor calpeptin caused similar reduction in CVB1 entry and transmission. Together, our findings provide evidence that CVB1 infected HeLa cells enhance MV production, and that these MVs aid the spread of infection. Furthermore, inhibition of MV release using siRNA results in inhibition of CVB1 entry and spread.