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The miRNA-Mpox Connection: Elucidating the Role of MicroRNAs in Virus-Host Interactions

Within the genus Orthopoxvirus, monkeypox virus (MPV) is a viral zoonotic disease that is spread from animal to human. It has been demonstrated recently that the MPV outbreak has spread to more than 80 nations. The pathogen and host engage in intricate interactions that dictate the final outcome of microbial infection. Recognition of conserved signature: molecular structures, known as pathogen-associated molecular patterns (PAMPs) typically starts host–pathogen interactions. Pathogen Recognition Receptors (PRRs) that are germline-encoded host sensors are responsible for sensing PAMPs. These molecular interactions are essential for the activation of both adaptive and innate immune system. Recently, microRNAs (miRNAs) have been shown to play a role in controlling innate immune pathways. Small noncoding RNAs (miRNAs) with about 19-23 nucleotides have emerged as translational repressors of gene transcripts. They attach to the 3′-untranslated regions (3′-UTRs) of target transcripts, causing the transcripts to be degraded or the translation of proteins to be inhibited. The relationship between miRNAs and PRRs signalling has been demonstrated by mounting data on miRNA functions. Numerous miRNAs have been shown to express differently when the MPV virus is present, which may be used to understand the molecular mechanism responsible for mpox pathogenesis. Studies have revealed that Mpox illnesses exhibited dramatically altered miRNA expression profiles. Among them, Mpox patients had dysregulated expression of miR-19b-3p. Bioinformatics tool was to investigate the molecular role of miR-19b-3p in the aetiology of Mpox pathogenesis.

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