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Not all West Nile virus lineages behave alike: dose-response differences between lineages 1 and 2

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The globally distributed arbovirus West Nile virus (WNV) is expanding across Europe, with rising numbers of human cases and an increasingly broad geographic distribution. Transmitted primarily by *Culex* mosquitoes, WNV lineages 1 and 2 are pathogenic to humans, yet their differences in transmission dynamics remain unclear. As vertebrate hosts develop varying viremia, mosquitoes encounter a wide range of viral doses, which may influence transmission. Here, we investigated the dose-response differences between the lineages in *Cx. pipiens* biotype *pipiens*, *Cx. torrentium*, and *Aedes albopictus*. Mosquitoes were fed increasing titers of one strain of either WNV lineage, and infection and transmission were assessed after 14 days at 24°C. Lineage 2 required lower infectious doses while causing higher transmission. Notably, *Cx. torrentium* was identified as a highly competent vector for lineage 2. These findings highlight important differences between WNV lineages, improve our understanding of dose-dependent transmission, and therefore support refined risk assessments in Europe.

Keywords

West Nile virus, minimal infectious dose, lineage 1, lineage 2, transmission risks, *Culex*, *Aedes*

Registration ID

73

Professional Status of the Speaker

Postdoc

Junior Scientist Status

No, I am not a Junior Scientist.

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