Epidemiology and Infection

**Association of meteorological factors with seasonal activity of influenza A subtypes and B lineages in subtropical western China**

M. Pan1,†, H.P. Yang1,†, J. Jian2, Y. Kuang3, J.N. Xu1, T.S. Li1, X. Zhou4, W.L. Wu4, Z. Zhao3, C. Wang5, W.Y. Li3, M.Y. Li3, S.S. He1, L.L. Zhou3,\*

1Sichuan Center for Disease Control and Prevention, Chengdu 610041 China

2Guiyang Center for Disease Control and Prevention, Guiyang 550003 China

3West China School of Basic Medical Sciences & Forensic Medicine, Sichuan University, Chengdu 610041 China

4Panzhihua Center for Disease Control and Prevention, Panzhihua 617000 China

5Department of Medical Technology, West China School of Public Health, Sichuan University, Chengdu 610041 China

† These authors contributed equally to this work.

\* Correspondence:Linlin Zhou

West China School of Basic Medical Sciences & Forensic Medicine, Sichuan University, No.17 People's South Road, Chengdu, 610041, Sichuan, P.R. China

Email: zhoulinlin@scu.edu.cn

**Supplementary Material**

**Table S1.** The primers and probes used for real-time reverse transcription PCR (rRT-PCR) for determining the types, subtypes, and lineages of influenza isolates.

|  |  |
| --- | --- |
| **Primer/Probe** | **Base composition** |
| FluA-Forward | 5’-GACCRATCCTGTCACCTCTGAC-3’ |
| FluA-Reverse | 5’-GGGCATTYTGGACAAAKCGTCTACG-3’ |
| FluA-probe | 5’-TGCAGTCCTCGCTCACTGGGCACG-3’ |
| FluB-Forward | 5’-TCCTCAACTCACTCTTCGAGCG-3’ |
| FluB-Reverse | 5’-CGGTGCTCTTGACCAAATTGG-3’ |
| FluB-probe | 5’-CCAATTCGAGCAGCTGAAACTGCGGTG-3’ |
| BHA- Forward | 5’-AGACCAGAGGGAAACTATGCCC-3’ |
| BHA- Reverse | 5’-TCCGGATGTAACAGGTCTGACTT-3’ |
| VIC- probe | 5’-CAGACCAAAATGCACGGGGAAHATACC-3’ |
| YAM- probe | 5’-CAGRCCAATGTGTGTGGGGAYCACACC-3’ |
| CNICH3-Forward | 5’-ACCCTCAGTGTGATGGCTTTCAAA-3’ |
| CNICH3-Reverse | 5’-TAAGGGAGGCATAATCCGGCACAT-3’ |
| CNICH3-Probe | 5’-ACGAAGCAAAGCCTACAGCAACTGT-3’ |
| pdmH1Forward | 5’-GGGTAGCCCCATTGCAT-3’ |
| pdmH1Reverse | 5’-AGAGTGATTCACACTCTGGATTTC-3’ |
| pdmH1Probe | 5’-TGGGTAAATGTAACATTGCTGGCTGG-3’ |
| H1-F247 | 5’-AACATGTTACCCAGGGCATTTCGC-3’ |
| H1-R361 | 5’-GTGGTTGGGCCATGAGCTTTCTTT-3’ |
| H1-P278 | 5’-GAGGAACTGAGGGAGCAATTGAGTTCAG-3’ |

**Table S2.** Summary of monthly statistics for climatic variables in Panzhihua, 2006–2015

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Climatic variable** | **Mean** | **S.D.** | **Median** | **Minimum** | **Maximum** |
| **Temperature (°C)** | 21.2 | 4.9 | 22.3 | 11.9 | 29.6 |
| **Vapor pressure (hPa)** | 13.2 | 5.7 | 12.1 | 4.8 | 22.9 |
| **Relative humidity (%)** | 53.9 | 15.6 | 59.0 | 24.0 | 77.0 |
| **Precipitation (cm)** | 6.2 | 7.9 | 1.8 | 0.0 | 35.2 |
| **Sunshine hours (h)** | 230.6 | 48.4 | 237.3 | 120.3 | 328.2 |

**Figure S1.** Seasonal prevalence and wavelet power spectrum of influenza A subtypes and B lineages in Panzhihua, 2006–2015.(A) The monthly positive rates of laboratory confirmed A/H3N2, seasonal A/H1N1, A/H1N1pdm09, Victoria, and Yamagata. (B) Wavelet power spectrum of the monthly activity of influenza virus. White lines highlight periodicities that reach statistical significance of 95%. The region outside the white-curved cone indicates the presence of edge effects. The power values were shown in the panel on the right. Time series have been square-root transformed.