Rapid evaluation of vaccine as booster shot for omicron subvariants

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With continuous mutations of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), the severe immune escape of omicron

subvariants highlights the need for development of next-generation broad-spectrum vaccines, especially as boosters after high-level vaccination coverage of inactivated vaccines in China and many other countries. Previously, the authors of this article developed a coronavirus disease 2019 (COVID-19) protein subunit vaccine ZF2001 based on the tandem homo-prototype receptor-binding domain (RBD)-dimer of the SARS-CoV-2 spike protein.

The antigen was upgraded into a hetero-chimeric prototype (PT)-Beta or Delta-BA.1 RBD-dimer to broaden the cross-protection efficacy and prove its efficiency with protein subunit and mRNA vaccine platforms. The authors further explore the hetero-chimeric RBD-dimer mRNA vaccines and evaluated their broad-spectrum activities as booster jabs following two doses of inactivated vaccine (IV) in mice.

The data demonstrated that the chimeric vaccines significantly boosted neutralizing antibody levels and specific T-cell responses against the variants, and PT-Beta was superior to Delta-BA.1 RBD as a booster in mice, shedding light on the antigen design for the next generation COVID-19 vaccines. The findings are published in the journal *Biosafety and Health*.

More information: Qian Chen et al, Rapid evaluation of heterologous chimeric RBD-dimer mRNA vaccine for currently-epidemic Omicron sub-variants as booster shot after inactivated vaccine, *Biosafety and Health* (2023). DOI: 10.1016/j.bsheal.2023.02.002

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