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## Development of comprehensive food composition databases and web-based applications for assessing nitrate and nitrite dietary intake

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The health implications of dietary nitrate and nitrite intake are yet to be fully determined. Up-to-date nitrate and nitrite food composition databases are required to obtain a robust assessment of dietary nitrate and nitrite intake. We performed a systematic, comprehensive collation of available nitrate and nitrite concentration data published between 1980–2022. We developed two comprehensive nitrate and nitrite food composition databases for plant- and animal-based foods.<sup>(1,2)</sup> The databases contain over 50,000 nitrate and nitrite analytic concentration data from 65 countries. Over 1000 foods were included in the databases, including vegetables, fruits, cereals, herbs, spices, pulses, nuts, eggs, red meat, processed meat products, poultry meat, offal, fish and seafood products, and dairy products. Other relevant information such as growing method, harvest season, year and location of sampling, processing and preservation method, analytic method and country of sampling were also collected in the databases. We identified large variabilities of nitrate and nitrite content for most food groups, indicating that values from study-specific nitrate and nitrite quantifications or compiled from limited literature are likely unreliable. Moreover, considerable cross-region variabilities in nitrate and nitrite content were observed. Therefore, region-specific nitrate and nitrite concentrations should be used. To this end, we developed web-based applications for the databases. The applications support browsing, searching, filtering (by countries, for example), comparing, analysing and visualising the nitrate and nitrite data. This includes a semi-automatic program to analyse and assign nitrate and nitrite values to food survey questionnaires. The reference databases and web applications can now be used to investigate the associations between nitrate and nitrite dietary intake and health outcomes in clinical trials and observational studies.<sup>(3)</sup>

### References

1. Zhong L, Liu A, Blekkenhorst L, *et al.* (2022) *Mol Nutr Food Res* **66**, 2100272.
2. Zhong L, Blekkenhorst L, Bondonno N, *et al.* (2022) *Food Chem* **394**, 133411.
3. Lundberg JO, Carlstrom M & Weitzberg E (2018) *Cell Metab* **28**, 9-22.