Metals levels and human health risk assessment in eight commercial fish species collected from a market, Wuhan, China

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**Table S1** Optimized instrumental parameters of inductively coupled plasma mass spectrometry (ICP-MS).

|  |  |
| --- | --- |
| Parameters | Values |
| RF forward power | 1500 W |
| Cooling gas flow rate | 14 L/min |
| Auxiliary gas flow rate | 0.8 L/min |
| Helium gas flow rate | 5.0 L/min |
| Atomizer velocity | 1.0 L/min |
| Atomizing chamber temperature | 4 ℃ |
| Detector voltage | 1200 V |
| Focus voltage | 21 V |
| Sample depth  | 5.0 mm |
| Sampling cone | Ni |
| Sampling cone | 4 |

**Table S2** Heavy metal concentrations (mg/kg) and recoveries in spike muscle samples.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Metal | Certified value | Measured value | Recovery (%) | RSD (%) |
| Ni | 8.333 | 6.703 ± 0.215 | 80.5 | 3.2 |
| Cu | 8.333 | 8.297 ± 0.106 | 99.6 | 1.3 |
| Zn | 8.333 | 8.487 ± 0.074 | 101.9 | 0.9 |
| Cd | 8.333 | 7.430 ± 0.110 | 89.2 | 1.5 |
| Pb | 8.333 | 8.770 ± 0.056 | 105.3 | 0.6 |

**Table S3** Correlation analysis among metals in fish samples.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Ni | Cu | Zn | Pb |
| Ni | 1 |  |  |  |
| Cu | -0.227 | 1 |  |  |
| Zn | 0.399 | 0.178 | 1 |  |
| Pb | -0.280 | 0.400 | -0.218 | 1 |

**Table S4** The average metal content in different fish feeds (mg/kg).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Feed of different fish | Ni | Cu | Zn | Cd | Pb |
| *C. idellus* | 0.553 | 14.454 | 86.959 | 0.095 | 0.083 |
| *M. amblycephala* | 0.587 | 16.139 | 96.406 | 0.098 | 0.260 |
| *H. molitrix* | 1.088 | 15.378 | 110.921 | 0.116 | 0.680 |
| *H. nobilis* | 1.038 | 16.049 | 113.279 | 0.124 | 1.020 |
| *C. auratus* | 0.546 | 15.258 | 94.694 | 0.101 | 0.196 |
| *C. carpio* | 0.580 | 16.724 | 116.571 | 0.082 | 0.335 |
| *C. alburnus* | 1.007 | 15.765 | 144.028 | 0.111 | 0.393 |
| *L. japonicus* | 0.194 | 12.694 | 136.894 | 0.460 | 0.524 |

**Table S5** Correlation analysis between metal content in feed and metal content in fish tissues.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Ni | D | V | H |  |  | Cu | D | V | H |
| Ni | 1 |  |  |  |  | Cu | 1 |  |  |  |
| D | 0.396 | 1 |  |  |  | D | 0.508 | 1 |  |  |
| V | 0.515 | 0.778\*\* | 1 |  |  | V | 0.191 | 0.708\* | 1 |  |
| H | 0.282 | 0.465 | 0.805\* | 1 |  | H | 0.214 | 0.358 | 0.742\* | 1 |
|  |  |  |  |  |  |  |  |  |  |  |
|  | Zn | D | V | H |  |  | Pb | D | V | H |
| Zn | 1 |  |  |  |  | Pb | 1 |  |  |  |
| D | -0.137 | 1 |  |  |  | D | -0.651 | 1 |  |  |
| V | -0.215 | 0.904\*\* | 1 |  |  | V | -0.527 | 0.956\*\* | 1 |  |
| H | -0.045 | 0.978\*\* | 0.922\*\* | 1 |  | H | -0.430 | 0.578 | 0.603 | 1 |