

Correction

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Heavy metal ions in wines: meta-analysis of target hazard quotients reveal health risks

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Abstract

Correction to Naughton DP, Petroczi A: Heavy metal ions in wines: meta-analysis of target hazard quotients reveals health risks. *Chem Central J* 2008, **2**:22.

Correction

During preparation of a subsequent paper, we observed a computational error in the Target Hazard Quotients (THQ) listed in this work which have been inadvertently overestimated [1]. The overall results and conclusion of our paper with the corrected figures have remained valid. Corrections for Figures Four, Five and Six are given below in tabular form. The correct values with $E_{Fr} = 365$ days, $ED_{tot-male} = 63.9$ years and $ED_{tot-female} = 66.7$ years; $BW_{male} = 83.11$ kg, $BW_{female} = 69.81$ kg, $AT = 6$ years and 30 years (non-carcinogenic) are shown in Tables 1 and 2 (For Fig Four); and Tables 3 and 4 (for Figs Five and Six). Although in keeping with the literature, THQ values were calculated for $AT = 30$ years, given the effect metals are assumed to have on health and delayed onset, AT is likely to be below 30 years. As noted in the paper, the THQ values calculated are concerning in that they are mainly above the safe level of $THQ \leq 1$, which premise holds for many cases with the adjusted THQ values. It must be emphasized that the THQ value is to be judged as either below or above 1, where any

value above 1 is a cause for health concern. It is notable that i) choices in value input into averaging time (AT), ii) uncertainty factor regarding the oral reference dose (RfD) and iii) bioavailability can have significant effect on the THQ value. The THQ is designed to be a conservative estimate. However, further research is required in order to provide guidance on appropriate value choices.

Competing interests

The authors declare that they have no competing interests.

References

1. Naughton DP, Petroczi A: **Heavy metal ions in wines: meta-analysis of target hazard quotients reveals health risks.** *Chem Central J* 2008, **2**:22.

Table 1: corrected combined THQ values for countries (AT = 6 years)

Country	SUM Male min	SUM Male max	SUM Female min	SUM Female max
Argentinean	0.021624	0.038379	0.026872	0.047693
Australian	0.080282	0.359869	0.099765	0.447204
Austrian	2.243322	5.447014	2.787739	6.768916
Brazilian	0.000192	0.001068	0.000239	0.001327
Czech	0.705472	2.476704	0.876679	3.077760
French	2.114068	8.136375	2.627117	10.11094
German	0.483296	5.512977	0.600584	6.850887
Greek	0.192215	3.015917	0.238863	3.747830
Hungarian	0.535830	14.63428	0.647560	17.45348
Italian	0.000491	0.000726	0.000610	0.000902
Jordanian	0.040045	2.405039	0.049763	2.988702
Macedonian	0	1.441614	0	1.791470
Portuguese	3.524521	5.126613	4.379865	6.370758
Serbian	0.221963	1.438181	0.275829	1.787204
Slovakian	0.000128	12.81552	0.000159	15.92563
Spanish	0.864379	5.742503	1.074150	7.136116

Table 2: corrected combined THQ values for countries (AT = 30 years)

Country	SUM Male min	SUM Male max	SUM Female min	SUM Female max
Argentinean	0.004325	0.007676	0.005374	0.009539
Australian	0.016056	0.071974	0.019953	0.089441
Austrian	0.448664	1.089403	0.557548	1.353783
Brazilian	0.000038	0.000214	0.000048	0.000265
Czech	0.141094	0.495341	0.175336	0.615552
French	0.422814	1.627275	0.525423	2.022188
German	0.096659	1.102595	0.120117	1.370177
Greek	0.038443	0.603183	0.047773	0.749566
Hungarian	0.107166	2.926856	0.129512	3.490697
Italian	0.000098	0.000145	0.000122	0.000180
Jordanian	0.008009	0.481008	0.009953	0.597740
Macedonian	0.000000	0.288323	0.000000	0.358294
Portuguese	0.704904	1.025323	0.875973	1.274152
Serbian	0.044393	0.287636	0.055166	0.357441
Slovakian	0.000026	2.563103	0.000032	3.185127
Spanish	0.172876	1.148501	0.214830	1.427223

Table 3: Corrected mean THQ values for individual metals comparing red and white wines (AT = 6 years)

	Portuguese Red	Portuguese White	Czech Red	Czech White
V (male)	0.775268	1.890116	2.082331	2.386671
V (female)	0.963413	2.348816	2.587678	2.965878
Mn (male)	0.201139	0.237065	0.230353	0.179058
Mn (female)	0.249953	0.294597	0.286256	0.222512
Ni (male)	0.029153	0.039244	0.061402	0.043649
Ni (female)	0.036227	0.048768	0.076303	0.054242
Zn (male)	0.068557	0.070586	0.078310	0.046986
Zn (female)	0.085194	0.087716	0.097314	0.058389
Cu (male)	0.189812	0.039244	0.140157	0.122137
Cu (female)	0.235877	0.048768	0.174171	0.151777
Cr (male)	0.000562	0.000699		
Cr (female)	0.000518	0.000644		
Pb (male)	0.000410	0.000308	0.000342	0.000667
Pb (female)	0.000510	0.000383	0.000425	0.000829

Table 4: Corrected mean THQ values for individual metals comparing red and white wines (AT = 30 years)

	Portuguese Red	Portuguese White	Czech Red	Czech White
V (male)	0.155054	0.378023	0.416466	0.477334
V (female)	0.192683	0.469763	0.517536	0.593176
Mn (male)	0.040228	0.047413	0.046071	0.035812
Mn (female)	0.049991	0.058919	0.057251	0.044502
Ni (male)	0.005831	0.007849	0.012280	0.008730
Ni (female)	0.007245	0.009754	0.015261	0.010848
Zn (male)	0.013711	0.014117	0.015662	0.009397
Zn (female)	0.017039	0.017543	0.019463	0.011678
Cu (male)	0.037962	0.007849	0.028031	0.024427
Cu (female)	0.047175	0.009754	0.034834	0.030355
Cr (male)	0.000112	0.000104		
Cr (female)	0.000140	0.000129		
Pb (male)	0.000082	0.000062	0.000068	0.000133
Pb (female)	0.000102	0.000077	0.000085	0.000166

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