Analyst

CORRECTION

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Cite this: *Analyst*, 2016, **141**, 4235

Correction: Mesoporous titania thin films as efficient enzyme carriers for paraoxon determination/detoxification: effects of enzyme binding and pore hierarchy on the biocatalyst activity and reusability

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DOI: 10.1039/c6an90029a

www.rsc.org/analyst

Correction for 'Mesoporous titania thin films as efficient enzyme carriers for paraoxon determination/detoxification: effects of enzyme binding and pore hierarchy on the biocatalyst activity and reusability' by N. Frančič *et al.*, *Analyst*, 2014, **139**, 3127–3136.

The original manuscript contained errors in the data of Tables 2 and 3 and in the subsequent discussion of Table 3. The necessary changes are detailed below.

The third column of Table 2 is replaced; the complete table is as follows:

Table 2 His_6-OPH immobilization efficiency and activities

Sample/type of immobilization	Immobilization efficiency (%)	Activity (U per carrier)
TiF-9 cov.	44.1 ± 2.3	0.05 ± 0.01
TiF-13/38 cov.	65.5 ± 2.0	0.11 ± 0.03
TiF-9 ads.	15.2 ± 1.0	0.09 ± 0.02
TiF-13/38 ads.	18.4 ± 2.1	0.04 ± 0.01

Amendments are required to some of the data in column 2 of Table 3. Additionally, columns 4 and 5 of the original table are to be removed and replaced by the new column 4 given below, and footnotes a and b are added to the table. The complete table is as follows:

Table 3 Kinetic constants for POX hydrolysis by free and immobilized His_6-OPH

Sample	V_{max} (10^{-3} mM s^{-1})	K_M (mM)	Specific activity[b] (U mg_{OPH}^{-1})
Free enzyme – His_6-OPH[15 a]	2.5 ± 0.1	(10 ± 0.5) × 10^{-3}	6250 ± 500
Covalent attachment (TiF-9)	0.43 ± 0.2	0.48 ± 0.02	13 ± 1.45
Covalent attachment (TiF-13/38)	0.98 ± 0.1	0.98 ± 0.07	17 ± 2.2
Physical adsorption (TiF-9)	0.78 ± 0.2	0.23 ± 0.02	61 ± 6.5

[a] Literature data (ref. 15) where specific activity (SA) is given for the freshly expressed enzyme before lyophilisation. [b] Lyophilised enzyme contained only approx. 10–20% of His_6-OPH, thus the quantity of immobilized His_6-OPH is accordingly lower than the determined value, giving approx. 4, 6 and 2 μg of immobilized His_6-OPH. These quantities were further used to gain SA (U mg_{OPH}^{-1}) values. SA was calculated from the V_{max} divided by the mass of immobilized enzyme, where we also took into account volume of the reaction mixture and factor 60 to obtain results in correct units, namely U mg_{OPH}^{-1}. One unit of enzymatic activity (U) was considered as an enzyme concentration hydrolysing 1 μmol of the substrate (paraoxon) per minute at 25 °C.

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To reflect the changes to Table 3, amendments are required to the text and one figure within the section 'Performance, stability and reuse of synthesised biocatalyst films'. These corrections are detailed below.

Fig. 3 and its caption should be replaced to correct the wavelength at which absorbance was measured, as follows:

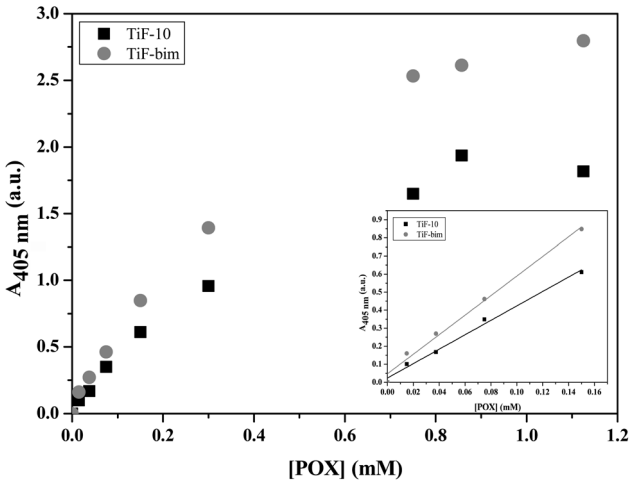

Fig. 3 Hydrolysis of paraoxon with covalently attached His_6-OPH biocatalyst films TiF-10 and TiF-bim measured at A = 405 nm after 5 min. Inset, biocatalyst films detection linear range. Measurements were performed with selected 50 mm^2 bio-functionalized mesoporous titania thin-films with covalently attached His_6-OPH at 20 °C, pH 10.5 (CB, 50 mM), and different substrate concentrations.

In the second paragraph of the section 'Performance, stability and reuse of synthesised biocatalyst films', the first two sentences should be amended as follows:

'Determination of the kinetic parameters for paraoxon hydrolysis by free and immobilized His_6-OPH demonstrated that depending on the immobilization method (covalent attachment *vs.* physical adsorption) and mesoporosity (TiF-9 and TiF-13/38) the specific activity (SA) was between 13–17 U mg^{-1} for covalently bound enzyme, and approx. 60 U mg^{-1} for adsorbed His_6-OPH (Table 3). When an enzyme was immobilized, regardless of immobilization type or porosity, the K_M of immobilized enzyme increased (approx. 20–100 times) while the V_{max} decreased (approx. 2.5–5 times); meaning that the affinity of the enzyme for its substrate and the velocity of the enzymatic reaction decreased.'

In the third paragraph of the section 'Performance, stability and reuse of synthesised biocatalyst films', the final sentence should be amended as follows:

'As expected, K_M of immobilized enzyme is higher than that of the enzyme in solution (Table 3), where K_M and V_{max} were found to be (0.48 ± 0.02) mM and (0.43 ± 0.02) × 10^{-3} mM s^{-1} for TiF-9, and 0.98 ± 0.07 mM and (0.98 ± 0.1) × 10^{-3} mM s^{-1} for TiF-13/38, respectively.'

In the fourth paragraph of the section 'Performance, stability and reuse of synthesised biocatalyst films', the first two sentences should be amended as follows:

'As mentioned before, for both samples the K_M increased and V_{max} decreased, where TiF-9 exhibited smaller changes (~48 times increase of K_M and ~5 times decrease of V_{max}) in comparison to the free enzyme. Due to the immobilization efficiency (44% and 65%), the specific activities of both samples is approximately the same (Table 3)'.

The fourth sentence of this paragraph is also amended as follows:

'The accumulation of a hydrolysis product, *p*-nitrophenol, was measured spectrophotochemically at 405 nm.'

References

15. Y. A. Votchitseva, E. N. Efremenko, T. K. Aliev and S. D. Volfomeyev, *Biochemistry (Moscow)*, 2006, **71**, 167.

The Royal Society of Chemistry apologises for these errors and any consequent inconvenience to authors and readers.

