Psychopharmacology (2021) 238:325–327
https://doi.org/10.1007/s00213-020-05708-4

CORRECTION

Correction to: Differential mechanisms underlie the regulation of serotonergic transmission in the dorsal and median raphe nuclei by mirtazapine: a dual probe microdialysis study

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Published online: 5 December 2020

Correction to: Psychopharmacology
https://doi.org/10.1007/s00213-013-3122-9

The authors have made unintentional errors in data analysis and consequently in four figures. The authors have hence re-analyzed their data using another application and submitted this Corrigendum which has been subject to peer-review before publication.

The authors would like to correct the following name: "Shunske Tanahashi" should be "Shunsuke Tanahashi". The corrected list of authors is given below: Kouji Fukuyama, Shunsuke Tanahashi, Tatsuya Hamaguchi, Masanori Nakagawa, Takashi Shiroyama, Eishi Motomura, Motohiro Okada.

The authors apologize to the readership for any inconvenience caused.

Summary of Errors

We identified figure errors in Figs. 1, 2, 3 and 6.

The errors in Figs. 1, 2 and 3 were figure drawing error induced by unexpected application errors.

The errors in Fig. 6A were induced by author's manipulation error during drawing figures.

Along with these corrections, the statistical analysis results will be slightly changed, whereas this improvement does not affect any discussion or conclusion.

The investigative Committee of "Code of Conduct for Research Mie University" had confirmed that the error in this article did not affect any conclusion.

Figure 1A control: Both mean ± SEM were incorrect data by application error.

Figure 1B MTZ (10 μM) and MTZ (30 μM): SEM data were incorrect data by application error.

Figure 1C control: Both mean ± SEM were incorrect data by application error.

Figure 1D control: Both mean ± SEM were incorrect data by application error.

Figure 2A control: Mean data was incorrect data by application error.

Figure 2D control: Mean data was incorrect data by application error.

Figure 3A idazoxan (30 M) + WAY100635 (10 M): SEM data was incorrect data by application error.

Figure 3B idazoxan (30 M) + WAY100635 (10 M): SEM data was incorrect data by application error.

Figure 3B idazoxan (30 M): SEM data was incorrect data by author's application error.

These three error bars were not SEM, but were SD.

Figure 6A MTZ: Both mean ± SEM were incorrect data by author's manipulation error.

The online version of the original article can be found at https://doi.org/10.1007/s00213-013-3122-9

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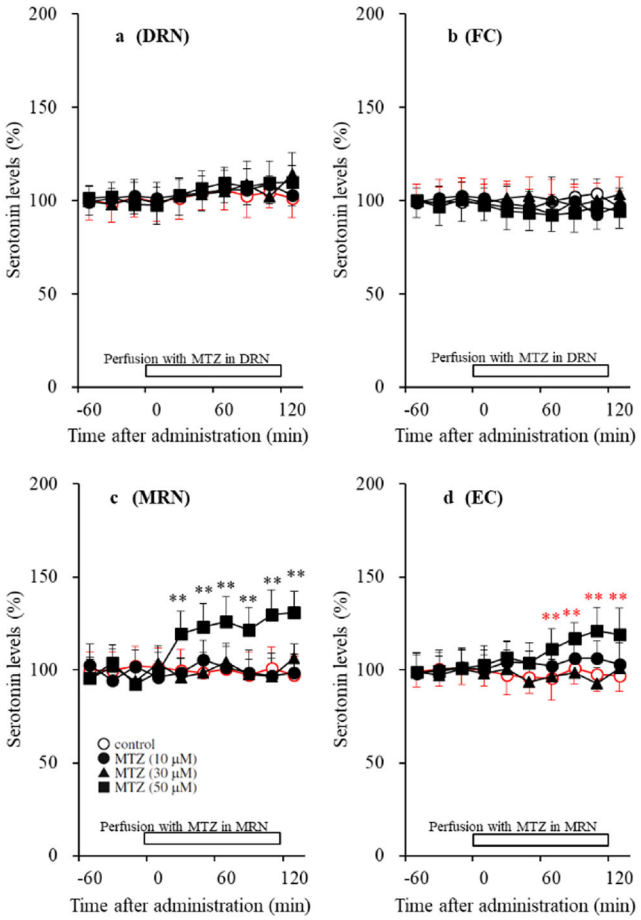

Figure Legend of Fig1.
Concentration-dependent effects of mirtazapine (MTZ) on extracellular serotonin level in the raphe nuclei and cortices. Effects of perfusion with MTZ (○: 0 μM, ●: 10 μM, ▲: 30 μM, ■: 50 μM) into the dorsal raphe nucleus (DRN) on extracellular serotonin level in the (a) DRN and (b) frontal cortex (FC). Effects of perfusion with MTZ into the median raphe nucleus (MRN) on extracellular serotonin level in the (c) MRN and (d) entorhinal cortex (EC). Open bars indicate perfusion with MTZ into the DRN or MRN. Ordinates: extracellular serotonin level (percent pre-perfusion with MTZ), abscissa: time after MTZ perfusion (min). Data are mean ± SEM ($n = 6$). The concentration-dependent effects of MTZ on extracellular serotonin level were compared using multivariate analysis of variance (MANOVA) with Tukey's multiple comparison (*$P < 0.05$ and **$P < 0.01$, vs. pre-perfusion with MTZ)

Results

Perfusion with MTZ (10, 30, and 50 μM) into the DRN failed to affect extracellular serotonin levels in either the DRN or the FC (Fig. 1a, b). Perfusion with 10 and 30 μM MTZ in the MRN also failed to affect extracellular serotonin levels in either the MRN or the EC. However, perfusion with 50 μM MTZ increased serotonin levels in both the MRN [MANOVA: $F_{Level}(3, 20) = 1.0$, $P > 0.05$; $F_{Time}(6, 120) = 6.0$, $P < 0.01$; $F_{Level \times Time}(18,120) = 5.2$, $P < 0.01$] and EC [MANOVA: $F_{Level}(3, 20) = 0.4$, $P > 0.05$; $F_{Time}(6, 120) = 2.4$, $P < 0.05$; $F_{Level \times Time}(18,120) = 1.8$, $P < 0.05$] (Fig. 1c, d).

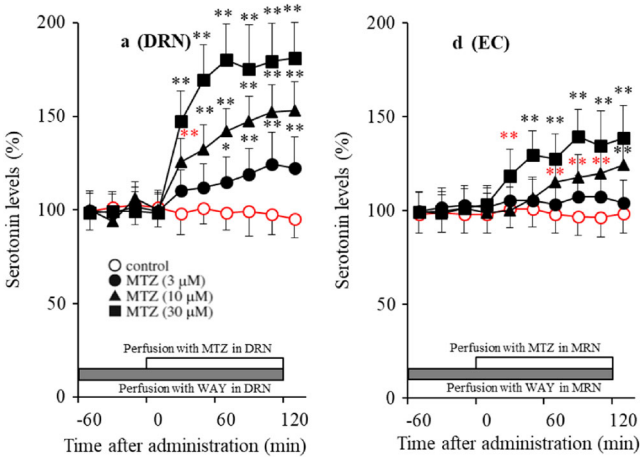

Figure Legend of Fig2ad.
Concentration-dependent effects of MTZ on extracellular serotonin level in the raphe nuclei and cortices, under blockade of 5-HT1A receptor induced by perfusion with 10 μM WAY100635 (WAY) in the raphe nuclei. Effects of perfusion with MTZ (○: 0 μM, ●: 3 μM, ▲: 10 μM, ■: 30 μM) into the DRN on extracellular serotonin level in the (a) DRN, under 5-HT1A receptor blockade induced by perfusion with 10 μM WAY into the DRN. Effects of perfusion with MTZ into the MRN on extracellular serotonin level in the (d) EC, under 5-HT1A receptor blockade induced by perfusion with 10 μM WAY into the MRN. Gray and open bars indicate perfusion with WAY and MTZ, respectively. Ordinate: extracellular serotonin level (percent pre-perfusion with MTZ), abscissa: time after MTZ perfusion (min). Data are mean ± SEM ($n = 6$). The concentration-dependent effects of perfusion with MTZ on extracellular serotonin level under the condition of 5-HT1A receptor blockade were compared using MANOVA with Tukey's multiple comparison (*$P < 0.05$ and **$P < 0.01$, vs. pre-perfusion with MTZ)

Results

Co-perfusion with 10 μM WAY and MTZ (3, 10, and 30 μM) into the DRN caused concentration-dependent increases in extracellular serotonin levels in both the DRN [MANOVA: $F_{Level}(3, 20) = 4.4$, $P < 0.05$; $F_{Time}(6, 120) = 18.2$, $P < 0.01$; $F_{Level \times Time}(18,120) = 4.6$, $P < 0.01$] (Fig. 2a).

Co-perfusion with 10 μM WAY and MTZ (3, 10, or 30 μM) into the MRN caused an increase in extracellular

serotonin levels in the EC [MANOVA: $F_{Level}(3, 20) = 1.3$, $P > 0.05$; $F_{Time}(6, 120) = 4.5$, $P < 0.01$; $F_{Level \times Time}(18,120) = 1.7$, $P < 0.05$] (Fig. 2d).

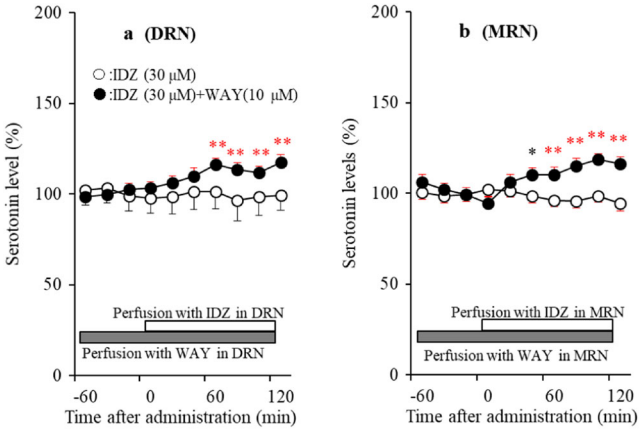

Figure Legend of Fig.3.
Effects of idazoxan (IDZ) on extracellular serotonin level in the raphe nuclei, under blockade of 5-HT1A receptor in the raphe nuclei. Effects of perfusion with IDZ into the DRN or MRN on extracellular serotonin level in the respective the (a) DRN and (b) MRN. Perfusion medium was switched from MRS containing with (●) or without (○) 10 μM WAY to the same MRS containing 30 μM IDZ. Gray and open bars indicate perfusion with 10 μM WAY and 30 μM IDZ into the DRN or MRN, respectively. Ordinate: extracellular serotonin level (percent pre-perfusion with IDZ), abscissa: time after IDZ perfusion (min). Data are mean ± SEM ($n = 6$). The interaction between WAY and IDZ on extracellular serotonin level was compared using MANOVA with Tukey's multiple comparison (*$P < 0.05$ and **$P < 0.01$, vs. perfusion with IDZ alone)

Results

Local perfusion with 30 μM IDZ without 10 μM WAY into the DRN failed to affect extracellular serotonin levels in the DRN; however, co-perfusion with WAY and IDZ caused an increase in extracellular serotonin levels in the DRN [MANOVA: $F_{Level}(1, 10) = 1.4$, $P > 0.05$; $F_{Time}(6, 60) = 2.1$, $P > 0.05$; $F_{Level \times Time}(6,60) = 2.3$, $P < 0.05$] (Fig. 3a).

Local perfusion with 30 μM IDZ without 10 μM WAY into the MRN failed to affect extracellular serotonin levels in the MRN; however, co-perfusion with WAY and IDZ caused an increase in extracellular serotonin levels in the MRN [MANOVA: $F_{Level}(1, 10) = 8.2$, $P < 0.05$; $F_{Time}(6, 60) = 3.5$, $P < 0.01$; $F_{Level \times Time}(6,60) = 9.1$, $P < 0.01$] (Fig. 3b).

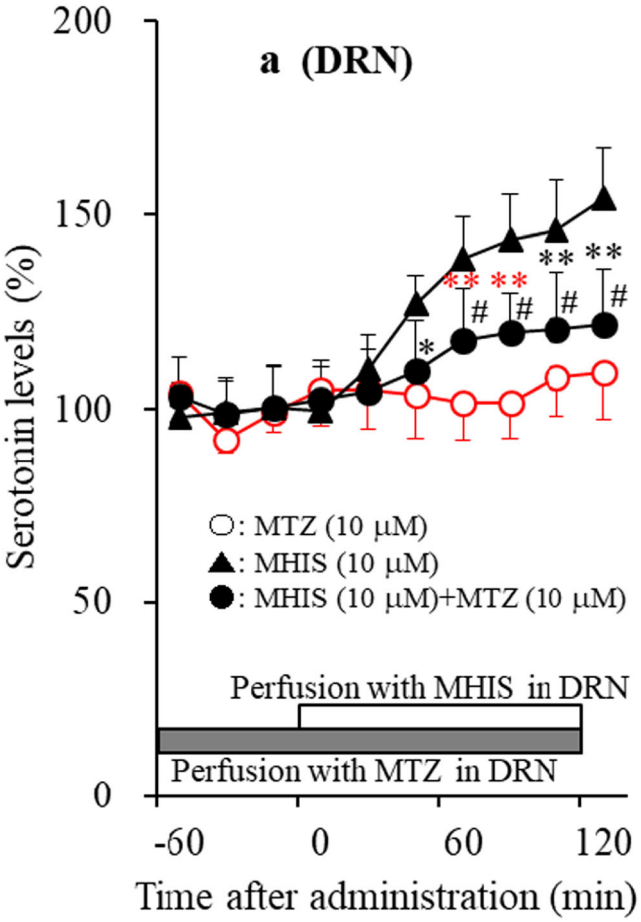

Figure Legend of Fig.6a.
Interaction between MTZ and N-methylhistaprodifen (MHIS) on extracellular serotonin level in the DRN. Effects of perfusion with 10 μM MTZ (○), 10 μM MHIS (▲), and 10 μM MTZ plus 10 μM MHIS (●) into the DRN on extracellular serotonin level in the (a) DRN. Gray and open bars indicate perfusion with MTZ and MHIS, respectively. Ordinate: extracellular serotonin level (percent pre-perfusion with MHIS), abscissa: time after MHIS perfusion (min). Data are mean ± SEM ($n = 6$). The interaction between MTZ and MHIS on extracellular serotonin level was compared using MANOVA with Tukey's multiple comparison (*$P < 0.05$ and **$P < 0.01$, vs. pre-perfusion with MHIS; $^{\#}P < 0.05$, vs. perfusion with MTZ)

Results

Perfusion with 10 μM MTZ into the DRN inhibited the rise in extracellular serotonin levels induced by 10 μM MHIS in the DRN [MANOVA: $F_{Level}(2, 15) = 1.8$, $P > 0.05$; $F_{Time}(6, 90) = 31.8$, $P < 0.01$; $F_{Level \times Time}(12,90) = 9.6$, $P < 0.01$] (Fig. 6a).