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LETTER TO THE EDITOR

Reply to the comment of Hirota *et al*. on "Accuracy of flash glucose monitoring in insulin-treated patients with type 2 diabetes"

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We thank Hirota *et al*.[1] for their interest in and constructive criticisms of our recent article in *Journal of Diabetes Investigation*[2]. In the present study, we measured blood glucose levels in both capillary blood and venous blood six times (before and 2 h after each meal) per day, and compared the results with interstitial glucose levels measured by the FreeStyle Libre Pro (FSL-pro) and iPro2[2]. Venous blood glucose level, a gold standard, was used as a reference to test the accuracy of glucose measurements by iPro2, FSL-pro and capillary blood, unlike most earlier studies in which capillary blood glucose level was used as a reference[3]. For the calibration of iPro2, capillary blood data at the time of the six measurements were used. We acknowledge that it would have been ideal for mean absolute relative difference assessment if calibration of iPro2 by capillary blood glucose was carried out several times at time points different from the six time points of venous glucose measurement. However, we did not select such a blood sampling protocol to minimize the difference from clinical routines. Although calibration was not required for FSL-pro, the mean absolute relative difference of FSL-pro (8.2 ± 5.6%) was similar to that of iPro2 (9.2 ± 9.1%) in the present study. Furthermore, there was a good correlation between glucose measurements by FSL-pro and those by iPro2 (n = 1,279, r^2 = 0.81, P < 0.01). Taken together, we believe that our conclusion that the accuracy of glucose measurement by FSL-pro is similar to that by iPro2 holds, even if iPro2 calibration led to some underestimation of the mean absolute relative difference.

We did not attempt to show the superiority of either device to the other, because just six measurements from five participants were compared in the present study. Furthermore, comparison of mean or median levels of glucose between the devices was not appropriate in our study design, as each glucose value depended not only on individuals, but also on its preceding value.

The better accuracy of glucose measurement by iPro2 and FSL-pro in the present study than in previous studies[3] might be due to lower glucose fluctuation, as we stated in the limitations. As the present study was carried out during hospitalization, physical activities and diets were well controlled, and thus blood glucose levels were almost in the physiological range. As the concept of "time in range" has recently been proposed as a new indicator of glycemic control[4], continuous glucose monitoring is becoming increasingly important. We agree with Hirota *et al*.[1] that the accuracy of new glucose monitoring devices needs to be further examined in a greater number of individuals with a wide range of blood glucose levels in future studies.

DISCLOSURE

The authors declare no conflict of interest.

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