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The three isoforms of Hepcidin measured in human serum by liquid chromatography-tandem mass spectrometry

Lynda Addo, Katsuya Ikuta, Satoshi Ito, Yusuke Sasaki, Hiroki Tanaka, Katsunori Sasaki, Yasushi Shimonaka, Motohiro Shindo, Yoshihiro Torimoto and Yutaka Kohgo.
Asahikawa Medical University, Japan

Hepcidin, the iron regulatory hormone, is known to have three isoforms (-20, -22, -25 amino acids). Research into hepcidin-25 has been extensive whereas the other isoforms have not received much attention. Because hepcidin dysregulation is evident in iron overload disorders, quantifying this peptide will prove vital in understanding its role in the development of such diseases. However, hepcidin assay methods still remain widely unavailable. Reports on the measurement of this peptide suggest that whereas hepcidin-25 and hepcidin-20 can be found in serum and urine, hepcidin -22 is only found in urine and not in serum. We sought to measure the three hepcidin isoforms in human serum using a method we previously established, based on LC-tandem/MS and to elucidate their characteristics.

Using our LC-tandem/MS method, we identified the hepcidin isoforms in sera from 40 randomly selected healthy volunteers.

All three hepcidin isoforms were detected in human sera. Hepcidin-25 levels were highest; however, hepcidin isoform concentrations varied among the individual samples. All three hepcidin isoforms correlated positively with serum ferritin, consistent with the role of hepcidin in iron metabolism. Also, all three isoforms correlated positively with each other. Hepcidin-20 showed a relatively positive correlation with serum creatinine. We found high concentrations of hepcidin-20 in the sera of chronic renal dysfunction patients. In conclusion, we found all three hepcidin isoforms in human sera. Although further studies on the other hepcidin isoforms are required, a simultaneous quantification of all the hepcidin isoforms may provide researchers with novel information and also serve as novel biomarkers.

Biography

Lynda Addo is an aspiring research scientist from Ghana, West Africa, and has an unwavering passion for scientific research and teaching. She is a recipient of the prestigious Japanese Government-sponsored MEXT scholarship (April 2011-March 2016) and is currently in the second year of her Ph.D. research at the Asahikawa Medical University, Japan. She graduated from the University of Ghana and worked as a Senior Research Assistant with the same institution for a period of 2 years. She has co-authored 2 scientific papers which have been published in reputable journals and are currently available online.

lyndaddo@asahikawa-med.ac.jp