Data article

Data on the calcium-induced mobility shift of myristoylated and non-myristoylated forms of neurocalcin delta

Jeffrey Viviano, Anuradha Krishnan, Hao Wu, Venkat Venkataraman

Graduate School of Biomedical Sciences, Rowan University, Stratford, NJ 08084, USA
School of Osteopathic Medicine, Rowan University, Stratford, NJ 08084, USA

Abstract

This data article presents the differences observed between the myristoylated and non-myristoylated forms of the neuronal calcium sensor protein, neurocalcin delta (NCALD). Analysis of the myristoylated and non-myristoylated versions of the protein by mass spectrometry provided difference in mass values consistent with addition of myristoyl group. In the presence of calcium, mobility retardation was observed upon electrophoresis of the protein in native gels. The retardation was dose-dependent and was exhibited by both the myristoylated and non-myristoylated forms of the protein.

2016 Published by Elsevier Inc. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/).

Specifications Table

| Subject area                        | Biology |
|-------------------------------------|---------|
| More specific subject area          | Electrophoretic Techniques |
| Type of data                        | Table, graph, figure |

DOI of original article: http://dx.doi.org/10.1016/j.ab.2015.11.005
Corresponding author.
E-mail address: vvenkat2007@gmail.com (V. Venkataraman).

http://dx.doi.org/10.1016/j.dib.2016.03.021
2352-3409 © 2016 Published by Elsevier Inc. This is an open access article under the CC BY license (http://creativecommons.org/licenses/by/4.0/).
How data was acquired

| Description          | Myr− Neurocalcin | Myr+ Neurocalcin |
|----------------------|------------------|------------------|
| Molar mass (g mol⁻¹ ± SD) (MALDI-MS) | 22,107.1 ± 0.8 | 22,325.8 ± 1.4 |
| Previously reported molar mass (g mol⁻¹ ± SD) (ESI-MS) | 22,110 ± 2 | 22,325 ± 2 |
(20 mM; pH 7.5) to remove any residual calcium. Calcium removal was through the use of Chelex-100 resin (BioRad Laboratories, CA, USA) using standard procedures. For mass spectrometry, protein samples were co-crystallized with a 1:1 mixture of sinapinic acid and matrix solution (50% acetonitrile/0.05% trifluoroacetic acid in water). Mass spectrometric analyses were carried out in linear, negative modes on a Bruker LRF MALDI-TOF instrument. The mass values were in good agreement with those reported earlier for the respective forms [4] (see Table 1). There was no peak corresponding to the non-myristoylated form in the myristoylated preparation.

Mobility Retardation of NCALD (and other NCS proteins) in native gels has been documented. The retardation was directly dependent on the concentration of calcium. In order to determine if myristoylation of NCALD was essential for the calcium-dependent mobility shift, analyses were carried out with the non-myristoylated (M yr\textsuperscript{−}) or myristoylated (M yr\textsuperscript{+}) NCALD. Protein was incubated in the presence of indicated concentration of calcium using calibration buffers and electrophoresed in native gels as described [1]. A representative image of the gel is presented in Panel A (Fig. 1). Relative mobility values were determined from at least three experiments and plotted as a function of calcium concentration (Fig. 1; Panel B). To facilitate direct comparison, the data for the myristoylated NCALD has been reproduced from [1].

Acknowledgements

The work was supported by grants from the New Jersey Health Foundation (previously UMDNJ) and the Osteopathic Heritage Foundation. The support by the RowanSOM Graduate School of Biomedical Sciences is also acknowledged. Dr. Michael Anikin is gratefully acknowledged for his help with mass spectrometry.

Appendix A. Supplementary material

Supplementary data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.dib.2016.03.021.

References

[1] J. Viviano, A. Krishnan, H. Wu, V. Venkataraman, Electrophoretic mobility shift in native gels indicates calcium-dependent structural changes of neuronal calcium sensor proteins, Anal. Biochem. 494 (2016) 93–100.
[2] A. Krishnan, V. Venkataraman, E. Fik-Rymarkiewicz, T. Duda, R.K. Sharma, Structural, biochemical, and functional characterization of the calcium sensor neurocalcin delta in the inner retinal neurons and its linkage with the rod outer segment membrane guanylate cyclase transduction system, Biochemistry 43 (2004) 2708–2723.

[3] V. Venkataraman, T. Duda, S. Ravichandran, R.K. Sharma, Neurocalcin delta modulation of ROS-GC1, a new model of Ca(2+) signaling, Biochemistry 47 (2008) 6590–6601.

[4] D. Ladant, C. Rossi, L. Beven, J. Chopineau, in vitro acylation of neurocalcin and exploration of its membrane binding properties with surface plasmon resonance spectroscopy, In: P. Phillippov, K.W. Koch (Eds.), Neuronal Calcium Sensor Proteins, Nova Science Publishers Inc., New York, NY, USA, 2006, pp. 351–370.