Ultraviolet Photodissociation Enhances Top-Down Mass Spectrometry as Demonstrated on Green Fluorescent Protein Variants

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Results and Discussion

Ultraviolet photodissociation (UVPD) is a compelling fragmentation technique with great potential to enhance proteomics generally and top-down MS specifically. In this issue, Cannon et al. (Proteomics 2014, *14*, 1165–1173) use UVPD to perform top-down MS on several sequence variants of green fluorescent protein and compare the results to CID, higher energy collision induced dissociation, and electron transfer dissociation. As compared to the other techniques UVPD produces a wider variety of fragment ion types that are relatively evenly distributed across the protein sequences. Overall, their results demonstrate enhanced sequence coverage and higher confidence in sequence assignment via UVPDMS. Based on these and other recent results UVPD is certain to become an increasingly widespread and valuable tool for top-down proteomics. The current work further extends the application of UVPD to the top-down analysis of larger and less standard proteins, five sequence variants (four mutants and wild type) of GFP, and makes a more complete comparison to other fragmentation methods. The samples were infused and 500 scans (for all fragmentation techniques) were averaged to achieve an impressive number of fragment ions and enable a thorough comparison of the fragmentation techniques. The results show, at least for this set of proteins that UVPD yields more confident assignments and often more complete sequence coverage than other techniques. With the extensive sequence coverage demonstrated by UVPD, combined with a very quick fragmentation time, the authors effectively demonstrate that UVPD is indubitably a powerful tool for top-down MS with a bright future.

Acknowledgements

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References

[1] Dang, X. *et al*., Proteomics, **14**, 1128-1129 (2014)