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^1H , ^{13}C , and ^{15}N peak assignments and secondary structure of human macrophage metalloelastase (MMP-12) in its inhibitor-free state

R. Bhaskaran and S. R. Van Doren*

Department of Biochemistry, University of Missouri, Columbia, MO 65211, USA

Macrophage metalloelastase (MMP-12) has substrate specificities that make it an important target of therapeutic development to treat abdominal aortic aneurysms, smoking-related emphysema and rheumatoid arthritis. To investigate these specificities of MMP-12, structural details of both free and bound states are helpful. Although NMR studies are available for MMP-12 bound to inhibitors (Bertini et al., 2005), studies of its inhibitor-free state were dismissed as infeasible due to autoproteolysis (Markus et al., 2005). Despite short sample lifetimes, we have succeeded in obtaining virtually complete ^1H , ^{13}C , and ^{15}N NMR resonance assignments of the catalytic domain of human MMP-12 in the absence of inhibitor. We extended the lifetimes of MMP-12 samples to at least five days, using a mutation and an enhanced purification protocol. A cryogenic probe proved pivotal for acquiring good quality NMR spectra of $^{13}\text{C}/^{15}\text{N}$ -labeled MMP-12 within these lifetimes. Its secondary structure has been derived from NOE patterns and chemical shift trends. The assignments are deposited under BMRB accession code 7089.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

References

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*To whom correspondence should be addressed. E-mail: vandorens@missouri.edu

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