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Letter to the Editor

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

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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 ^{1}H, ^{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 $^{13}C/^{15}N$-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.

References: Bertini I. et al. (2005) *Proc. Natl. Acad. Sci. USA*, **102**, 5334–5339; Markus M.A. et al. (2005) *J. Biomol. NMR*, **31**, 260.

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