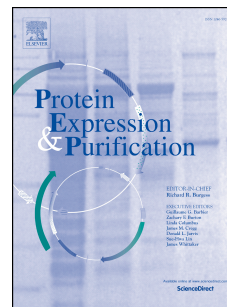


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## Efficient protease based purification of recombinant matrix metalloprotease-1 in *E. coli*

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### Abstract

MMP1 is an essential enzyme for tissue remodeling both in normal and pathological states. We report a method of purifying activated human MMP1 in *E. coli* without using urea or 4-Aminophenylmercuric acetate (APMA). Instead, a non-ionic detergent, Triton X-100, was used in the lysis buffer to solubilize MMP1 followed by the protease activities of both trypsin and MMP1 to digest *E. coli* proteins and activate pro-MMP1. Identity of activated MMP1 was confirmed by Western blot using anti-human MMP1 antibodies, whereas the mass was determined to be 43 kD using matrix assisted laser desorption ionization time-of-flight mass spectrometry (MALDI TOF-MS). Collagen and gelatin degradation by purified MMP1 were confirmed by sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS PAGE) of degraded FITC-labeled type-1 collagen and gelatin zymogram. Broad-spectrum protease activity of purified MMP1 was also confirmed by lysis of native *E. coli* proteins. Inexpensive high throughput purification of recombinant human MMP1 in *E. coli* will enable easier MMP1 production for diverse applications.

**Keywords:** Recombinant human MMP1, Protease activity of MMP1, Collagen degradation, Gelatin zymography.

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