Characterization of legumain

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The mammalian legumain, also called asparaginyl endopeptidase (AEP), is critically involved in the processing of bacterial antigens for MHC class II presentation. In order to investigate the substrate specificity of AEP in the P1' position, we created a peptide library and digested it with purified pig kidney AEP. Digestion was less efficient only when proline was in the P1' position. Maximum AEP activity was found in lysosomal fractions of different types of antigen presenting cells (APC). When the multiple sclerosis-associated autoantigen myelin basic protein (MBP) was digested with AEP, the immunodominant epitope 83-99 was destroyed. Myoglobin as an alternative substrate was AEP resistant. These results suggest an important, but not necessarily critical role for AEP in lysosomal antigen degradation.