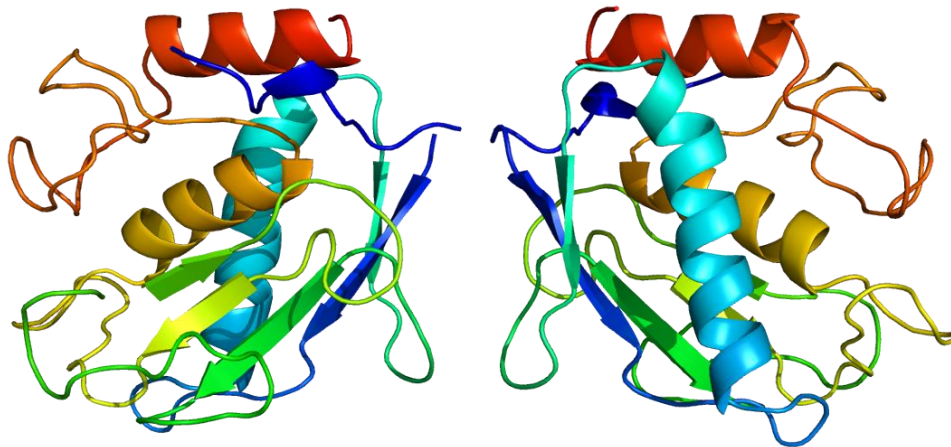


Tissue Remodelling Enzyme *Matrix Metalloproteinase (MMP)-7* Increases Risk of High Blood Pressure



Model of MMP7 proteins

A multidisciplinary group of researchers at Indian Institute of Technology (IIT), Madras, Translational Health Science and Technology Institute (THSTI), and Biotech Science Cluster, Faridabad, Indian Institute of Chemical Biology (ICB), Kolkata, Postgraduate Institute of Medical Education and Research (PGIMER), Chandigarh, and Madras Medical Mission (MMM), Chennai have linked the raised levels of a tissue remodelling enzyme *Matrix Metalloproteinase-7* to the risk of high blood pressure in two unrelated groups of Indians¹. This discovery is thought to help in developing strategies that can lower the risk levels of high blood pressure.

The MMP is a significant extracellular matrix degrading enzyme and it has emerged as a new control agent of various cardiovascular diseases (CVD). Huge variation has been found in genes which express MMP7 protein. The MMP provides support to cells during tissue growth. In this study, the small MMP7 protein has been linked to the risk of high blood pressure. The proteins have usually less activities, how any changes at gene level can elevate the levels of MMP7 protein, which in turn increases the risk of high blood pressure.

The study found an association of a tag single nucleotide polymorphism at specific base position in the MMP7 promoter region of gene (*i.e.*, if at a specific position in human genome, a

nucleotide say 'C' is present among most of the individual but among few, the same position is occupied by another nucleotide 'A') with the hypertension in urban South Indian population. Such variations in the genome have also been linked to higher diastolic blood pressure and mean arterial pressure compared to normal individuals (with wild type gene).

Besides, the MMP7 promoter region with variation is also implicated in enhanced response to hypoxia (inadequate oxygen supply at the tissues) and epinephrine treatment (epinephrine is used to treat anaphylaxis, cardiac arrest, superficial bleeding etc).

The researchers argue that it can help in devising preventive strategies for treating/managing the high risk of high blood pressure among individuals with such the genetic variation.

References:

1. Subramanian, L., Maghajothi, S., Singh, M., Kesh, K., Kalyani, A., Sharma, S., Khullar, M., Victor, S.M., Swarnakar, S., Asthana, S. and Mulasari, A.S., (2019). A Common Tag Nucleotide Variant in MMP7 Promoter Increases Risk for Hypertension via Enhanced Interactions with CREB (Cyclic AMP Response Element-Binding Protein) Transcription Factor. *Hypertension*, 74(6), 1448-1459.

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