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Simple Prediction Of Mmp-9/timp-1 Ratio Derived From One Of Biomarkers (the Study Is Limited To The Examination Of Mmp-9 And Timp-1 From The Saliva Among Ex-Smokers With Chronic Obstructive Pulmonary Disease)

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Emphysema is commonly found among ex-smokers experienced chronic obstructive pulmonary disease (COPD) with clinically manifest of irreversible shortness of breath. Basic lung examination may indicate a decrease in a post bronchodilator FEV1/FVC ratio <0.70 with four degrees of obstruction. This refers to the damaged lung parenchyma tissue and the extracellular matrix characterized by the increase of MMP-9 biomarker and the ratio of MMP-9 / TIMP-1 from the sputum and lung lavage fluid. This study examined smokers' saliva with COPD to assess MMP-9 biomarker activity and TIMP-1 level. This study involved 30 ex-smokers visiting the outpatient lung clinic regularly. They performed a lung function examination with spirometer and saliva collection. This study found Pearson correlation of MMP-9 activity to the ratio of MMP-9/TIMP-1: 0.91 ($p < 0.05$) and the level of TIMP-1 ratio to MMP-9/TIMP-1: -0.35 ($p > 0.05$). Research also obtained the R² value of MMP-9 activity to the ratio of MMP-9/TIMP-1: 0.84 ($p < 0.05$) using simple linear regression. Prediction of MMP-9/TIMP-1 ratio is beneficial to assess the damaged tissue. However, the MMP-9 activity alone cannot assess the damage. At least, two laboratory examination variables, namely MMP-9 and TIMP-1, are required to assess the ratio. This simple prediction is helpful to assess the rough ratio of MMP-9/TIMP-1, merely with MMP-9 examination. Knowing the value of MMP-9/TIMP-1 ratio in COPD is strongly associated with the decrease in the lung function and the degree of breathlessness severity that patients complained. This is most useful for clinicians to predict the damaged lung tissue and the extracellular matrix simply by examining the activity of MMP-9.

Keywords: prediction, ratio, biomarker, saliva, damage.

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