A Study of the Protease Inhibitor System in Patients with Type 2 Diabetes Mellitus Combined with Chronic Obstructive Pulmonary Disease

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Background

The imbalance between proteolytic enzymes and their inhibitors reflects the extent of damage to the vascular and pulmonary matrix in patients with type 2 diabetes mellitus (T2DM) and chronic obstructive pulmonary disease (COPD).

Aim

To evaluate the state of the **protease–inhibitor system** in patients with T2DM, COPD and their comorbidity.

Materials and Methods

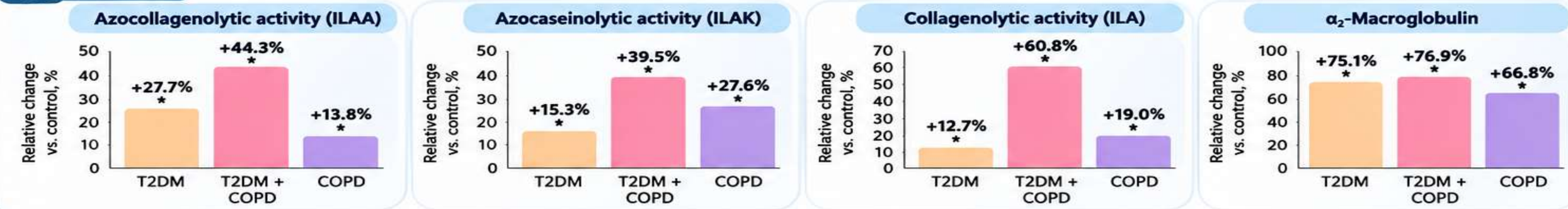
The study was conducted on **150 individuals**, divided into four **comparative groups:**

The following parameters were examined: azocollagenolytic activity (ILAA), azocaseinolytic activity (ILAK), collagenolytic activity (ILA), and α_2-macroglobulin.

- **Control group** (AHI) (n = 30)
- **Group 1** T2DM (n = 35)
- **Group 2** T2DM + COPD (n = 60)
- **Group 3** COPD (n = 35)



Results



- ILAA increased in T2DM by 27.7%, in COPD by 13.8%, and in T2DM + COPD by 44.3% ($p < 0.05$).
- ILAK increased by 15.3%, 27.6% and 39.5%, respectively ($p < 0.05$).
- ILA increased by 12.7% in T2DM, by 19.0% in COPD, and by 60.8% in T2DM + COPD ($p < 0.05$).
- α_2-Macroglobulin concentration increased by 75.1%, 76.9% and 66.8% in Groups 1, 2 and 3 ($p < 0.05$).

Conclusions

The co-morbid course of type 2 diabetes mellitus and COPD is accompanied by marked activation of plasma proteolysis and collagenolysis, which may reflect increased degradation of the extracellular matrix and contribute to vascular and lung tissue remodelling.