

**Cite this as:** Huiyuan ZHU, Shaochun YAN, Jingshuo WU, Zhong ZHANG, Xiaolin LI, Zheng LIU, Xing MA, Lina ZHOU, Lin ZHANG, Mingming FENG, Yiwei GENG, Aixin ZHANG, Sabina JANCIAUSKIENE, Aiguo XU. Serum macrophage migration inhibitory factor as a potential biomarker to evaluate therapeutic response in patients with allergic asthma: an exploratory study[J]. *Journal of Zhejiang University Science B*, 2021, 22(6): 512-520.  
<https://doi.org/10.1631/jzus.B2000555>

# **Serum macrophage migration inhibitory factor as a potential biomarker to evaluate therapeutic response in patients with allergic asthma: an exploratory study**

**Key words:** macrophage migration inhibitory factor; allergic asthma; eosinophilic inflammation; fractional exhaled nitric oxide; IgE;

# ***Research Summary***

## **Background:**

Previous studies have shown that macrophage migration inhibitory factor (MIF) is involved in the pathogenesis of asthma. This study aimed to investigate whether serum MIF reflects a therapeutic response in allergic asthma.

## **Methods:**

We enrolled 30 asthmatic patients with mild-to-moderate exacerbations and 20 healthy controls, analyzing the parameter levels of serum MIF, serum total IgE (tIgE), peripheral blood eosinophil percentage (EOS%), and fractional exhaled nitric oxide (FeNO). Lung function indices were used to identify disease severity and therapeutic response.

# ***Research Summary***

## **Results:**

- All measured parameters in patients before treatment were at higher levels than those of controls. After one week of treatment, most parameter levels decreased significantly except for serum tIgE.
- Serum MIF positively correlated with EOS% as well as FeNO, but negatively correlated with lung function indices.
- Receiver operator characteristic (ROC) curve analysis indicated that among the parameters, serum MIF exhibited a higher capacity to evaluate therapeutic response. The area under the curve (AUC) of MIF was 0.931, with a sensitivity of 0.967 and specificity of 0.8.

# ***Research Summary***

## **Conclusion:**

Serum MIF may serve as a potential biomarker for evaluating therapeutic response in allergic asthma with mild-to-moderate exacerbations.

# ***Innovation points***

**A series of comprehensive figures were generated to summarize this research about MIF related to allergic asthma**

**Fig. 1: Comparison of serum MIF, IgE, EOS%, and FeNO levels before and after treatment in asthmatic patients.**

**Fig. 2: Correlation among the levels of serum MIF, EOS%, and FeNO in asthmatic patients before and after treatment .**

**Fig. 3: Correlation among serum levels of MIF and FeNO and lung function indices in asthmatic patients before and after treatment .**

**Fig. 4 ROC curve analysis for evaluating the capacity of different parameters to profile therapeutic response.**