Comparison of serum biomarkers before and after long-term dupilumab treatment in Korean patients with severe atopic dermatitis

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✓ **Takeaway message:** Long-term dupilumab treatment in Korean patients with moderate-to-severe atopic dermatitis led to clinical improvement with distinct biomarker changes—IL-4 increased, while IL-18, CCL-13, and MMP-12 decreased. Elevated IgE levels were associated with higher VEGF-A and HGF, but no biomarkers predicted EASI90 response, suggesting systemic immune modulation through extended therapy.

✓ **Declaration of Conflict of Interest for the authors**: none.

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Background & Objective

- Serum biomarkers are known to reflect the inflammatory profile of atopic dermatitis (AD). While dupilumab has shown clinical efficacy in AD, limited data exist on long-term biomarker changes, particularly in ***Korean populations***.

- To evaluate serum biomarker changes before and after long-term dupilumab treatment in Korean patients with moderate-to-severe AD and to explore population-specific characteristics through comparison with healthy controls and prior literature.

Method

Healthy control (n=11)

Before treatment (n=20)

After treatment (n=20)

- **Twenty Korean patients** with moderate-to-severe AD who continued dupilumab treatment for over 6 months and had paired serum samples collected **at baseline and 10 months post-treatment** were included.
- Inflammatory proteins were quantified using the **Olink cytokine panel (45 biomarkers)**.
- Data were compared with those of **11 healthy controls**.
- Subgroup analyses were conducted based on elevation of serum IgE levels, improvement of MAST, changes of symptom of head and neck dermatitis, (D) EASI 90 response.
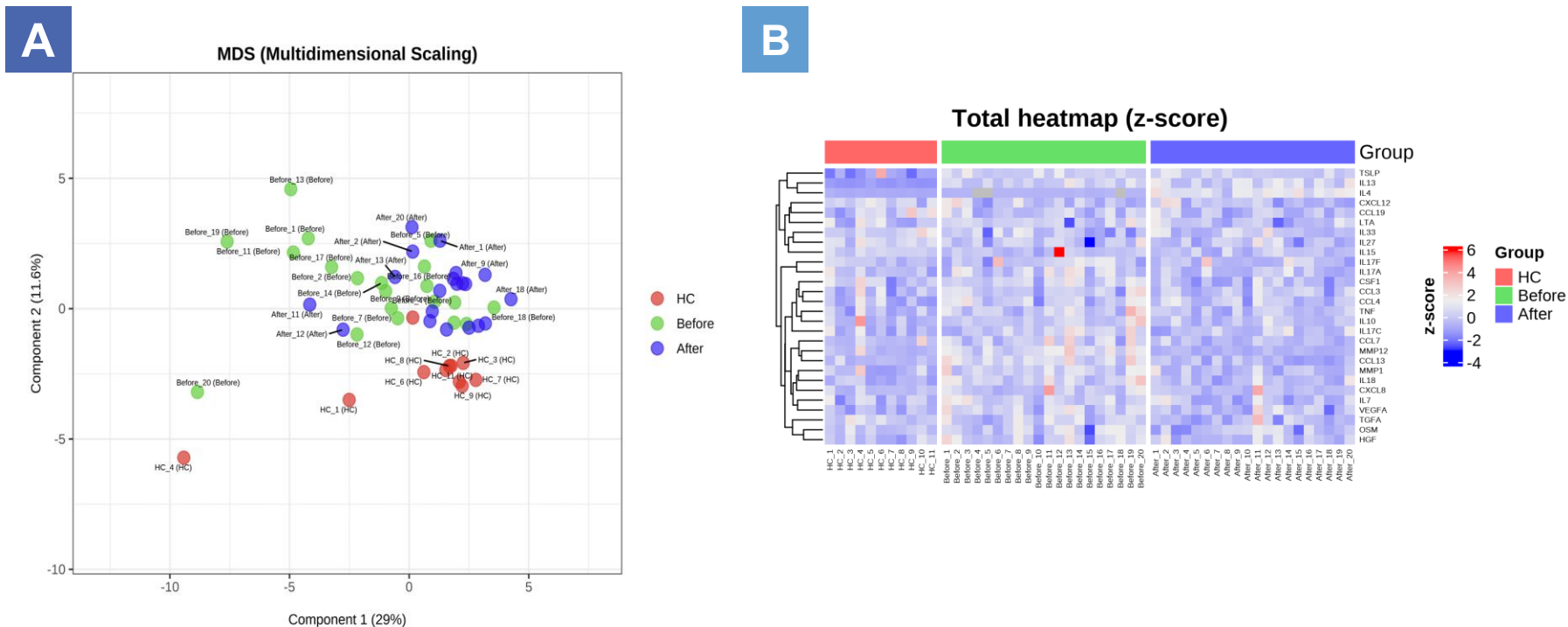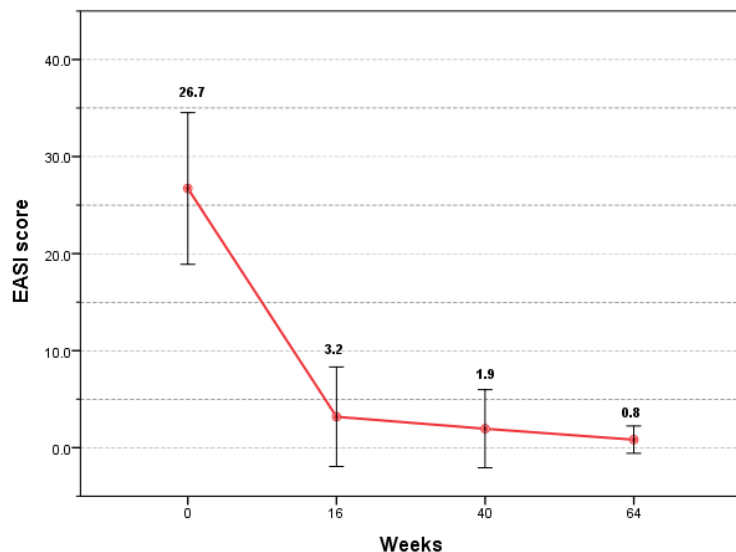
Results

Figure 1.
(A) Multidimensional scaling plot of the HC, before, and after groups.
(B) Heatmap analysis of the HC, before, and after groups. The column color bar at the top of the heatmap denotes group HC, before, and after.
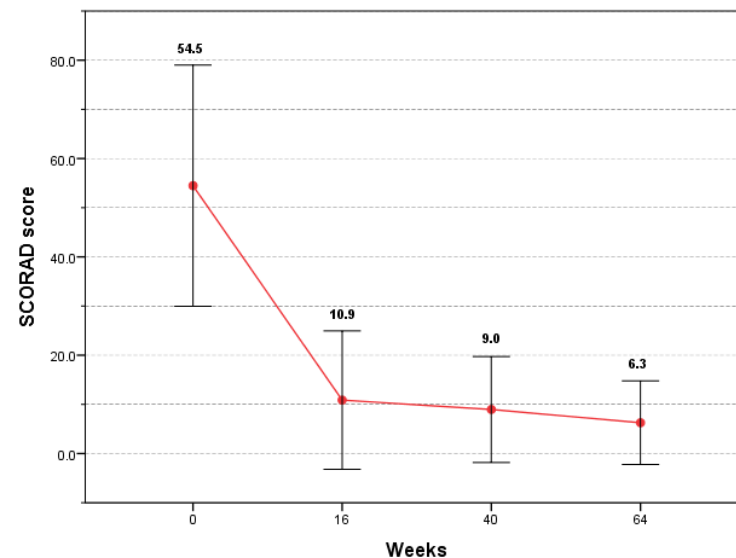(HC; healthy controls)

Results

Figure 2. Progressive clinical improvement reflected by **(A) EASI** and **(B) SCORAD** score during 16, 40, and 64 weeks of dupilumab treatment.
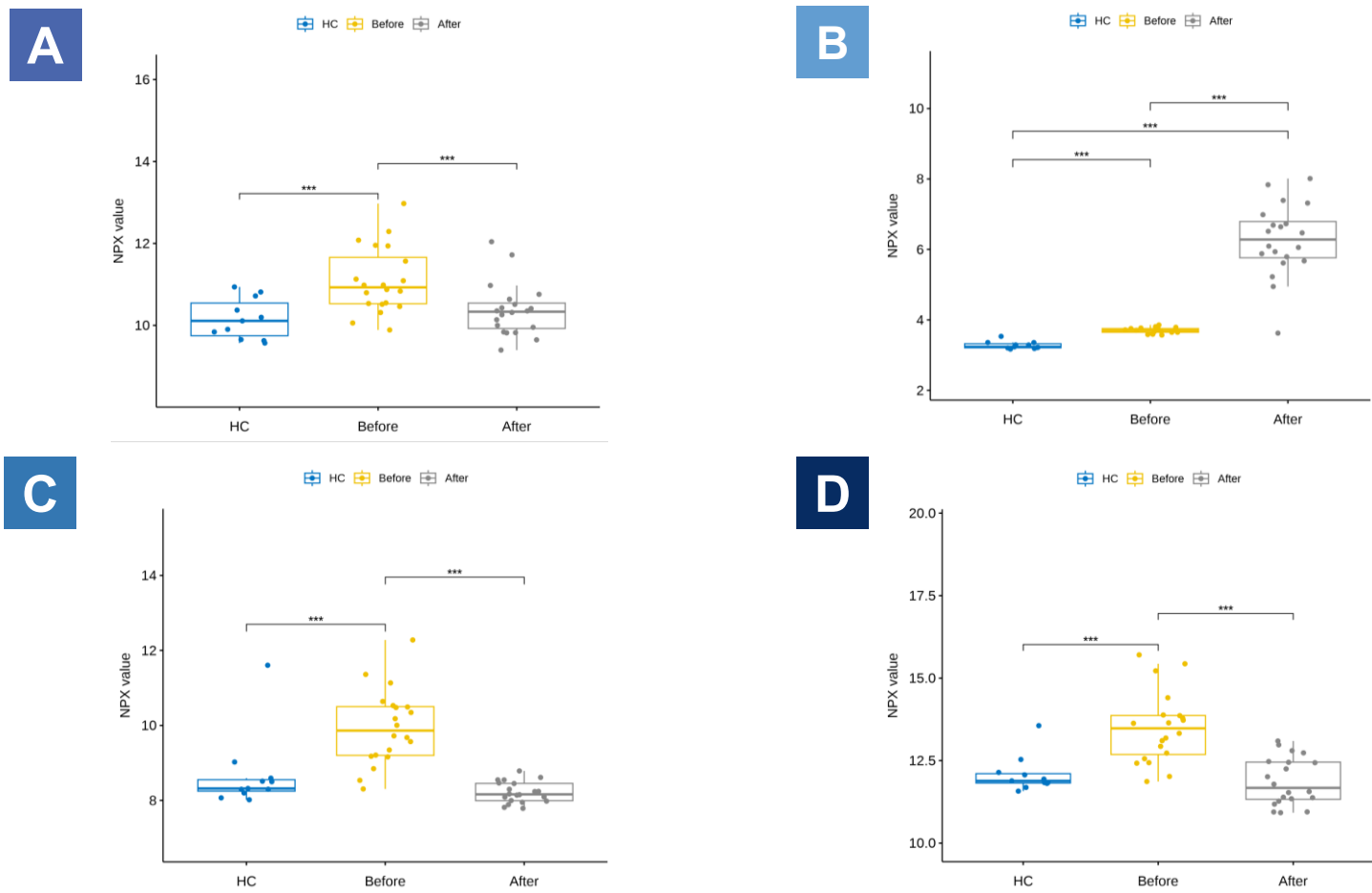
Results

Figure 3. Comparative assessment of serum biomarker distributions before and after 40 weeks of dupilumab treatment **(A)** IL-18, **(B)** IL-4, **(C)** MMP-12, **(D)** CCL-13 (adjusted p-value <0.05)
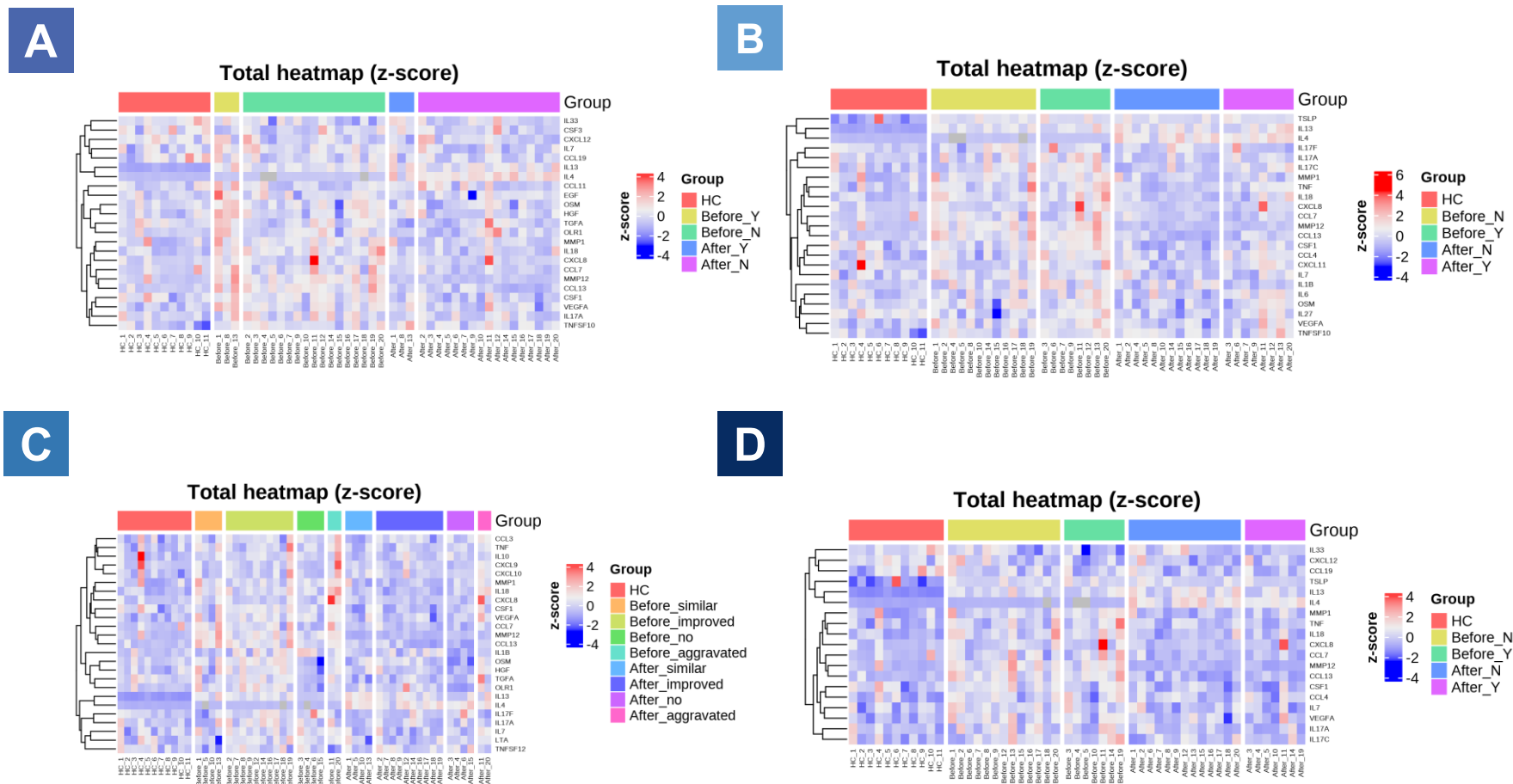
Results

Figure 4. Heatmap plot of the subgroup analysis according to
(A) elevation of the serum total IgE, **(B)** improvement of MAST,
(C) changes of symptom of head and neck dermatitis, **(D)** the achievement of EASI 90.
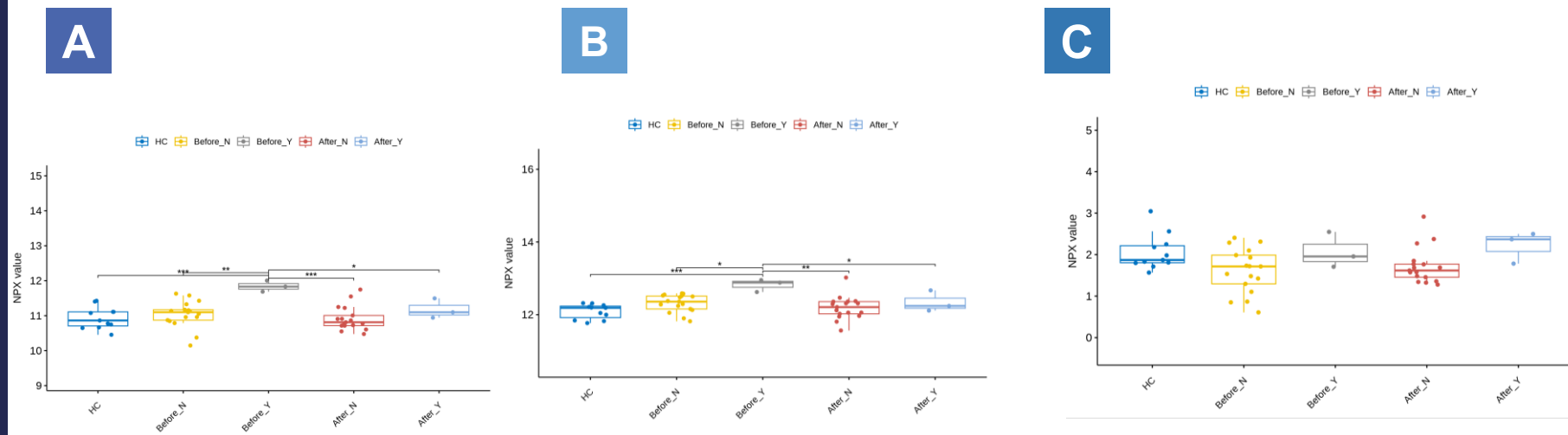
Results

Figure 5. Serum biomarker dynamics before and after 40 weeks of dupilumab therapy according to subgroup stratification by total IgE elevation. (A) HGF, (B) VEGFA, (C) IL-33

Results

Table 1. Demographics and clinical characteristics of the subjects at baseline

		Healthy control (n=11)	Patients before treatment (n=20)
Sex, n(%)	Male	3 (27.3)	10 (50)
	Female	8 (72.7)	10 (50)
Age (years), mean (SD)		37.6 (6.3)	33.4 (10.4)
Age of AD onset, (years), mean (SD)		-	6.25 (6.27)
Family history of atopy, n(%)		-	12 (60)
Atopic comorbidities, n(%)		-	9 (45)
BMI, mean (SD)		-	22.38 (3.37)
Eosinophil count, median (IQR)/mm3		-	495.0 (327.5-1112.5)
EASI score, mean (SD)		-	26.7 (3.91)
SCORAD, mean (SD)		-	54.5 (12.3)
Itch NRS, mean (SD)		-	7.5 (2.3)
Extrinsic vs Intrinsic, n(%)		-	16 (80)

Results

Table 2. Statistical analysis in the variation of the outcome measures compared to baseline

	week0	week16	*P-value*	week40	*P-value*	week64	*P-value*
AD scoring							
SCORAD, mean (SD)	54.5 (12.3)	10.9 (7.0)	<.05	9.0 (5.4)	<.05	6.7 (4.3)	<.05
Pruritus NRS, mean (SD)	7.5 (2.3)	3.7 (0.9)	<.05	2.4 (1.6)	<.05		
POEM, mean (SD)	21.0 (6.0)	7.3 (6.1)	<.05	4.0 (3.6)	<.05		
DLQI, mean (SD)	21.6 (6.1)	7.0 (6.4)	<.05	3.9 (3.9)	<.05		
ADCT, mean (SD)	19.4 (3.4)	6.9 (7.0)	<.05	3.8 (3.2)	<.05		

Conclusions

- ✓ Long-term dupilumab treatment led to clinical improvement and **measurable changes in select serum biomarkers.**

- ✓ These findings suggest systemic immunologic modulation with extended biologic therapy in **Korean patients with AD.**

Thank You for your listening.