重庆医科大学附属儿童医院
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# Efficacy and Safety: Vitamin D Supplementation In Children With Atopic Dermatitis

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**Takeaway Message :Safe and effective, vitamin D supplementation significantly improves atopic dermatitis in children.**

**The authors have no conflict of interest to declare.**

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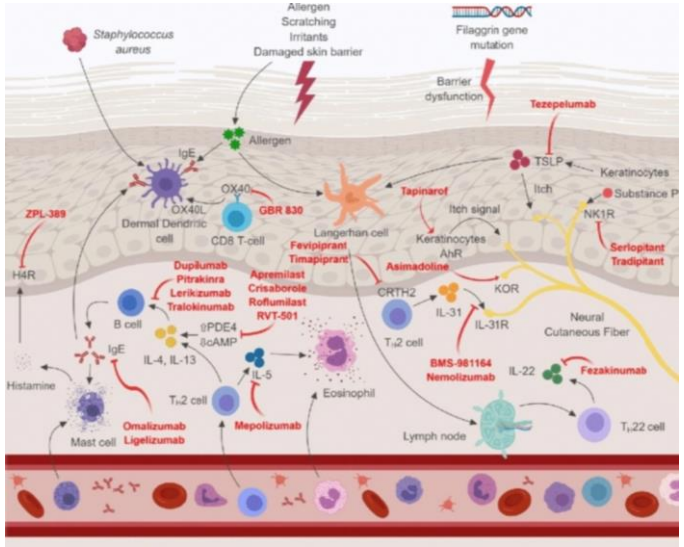
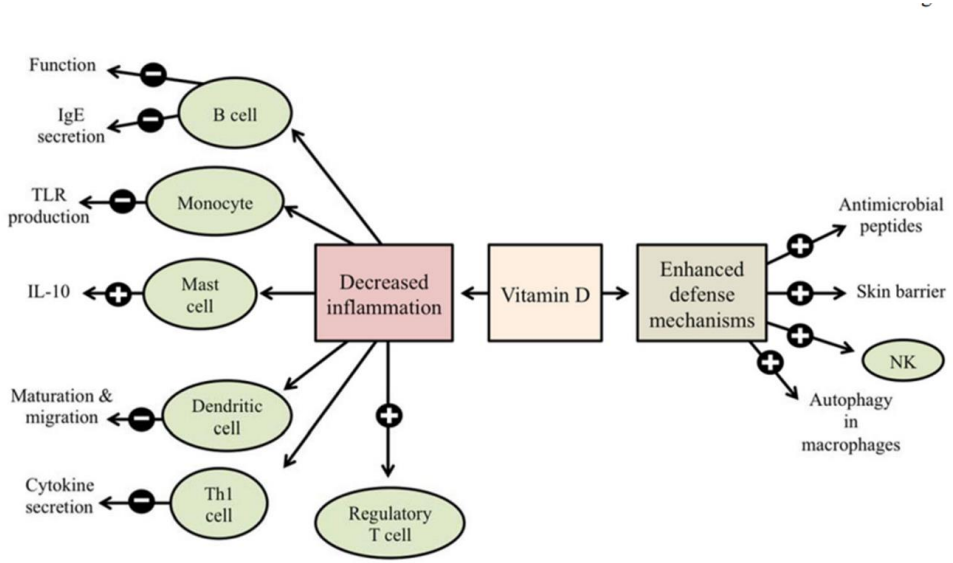
## Background

Atopic dermatitis (AD) is a common, chronic inflammatory skin disorder in children that significantly impairs quality of life. Vitamin D plays a critical role in immune regulation and skin barrier function.

Vitamin D (VD) deficiency is associated with atopic dermatitis (AD), particularly in children. Recent studies demonstrate that vitamin D supplementation could have a potential therapeutic effect on AD.



## Objective

This study aims to  investigate the efficacy of VD supplementation in reducing AD severity and its safety profile in children.

## Method

This is an open-labeled clinical trial enrolling AD children

Inclusion criteria: Hanifin-Rajka criteria; serum VD <50 nmol/L;

Exclusion criteria:  received systemic therapy; serum VD ≥ 50 nmol/L

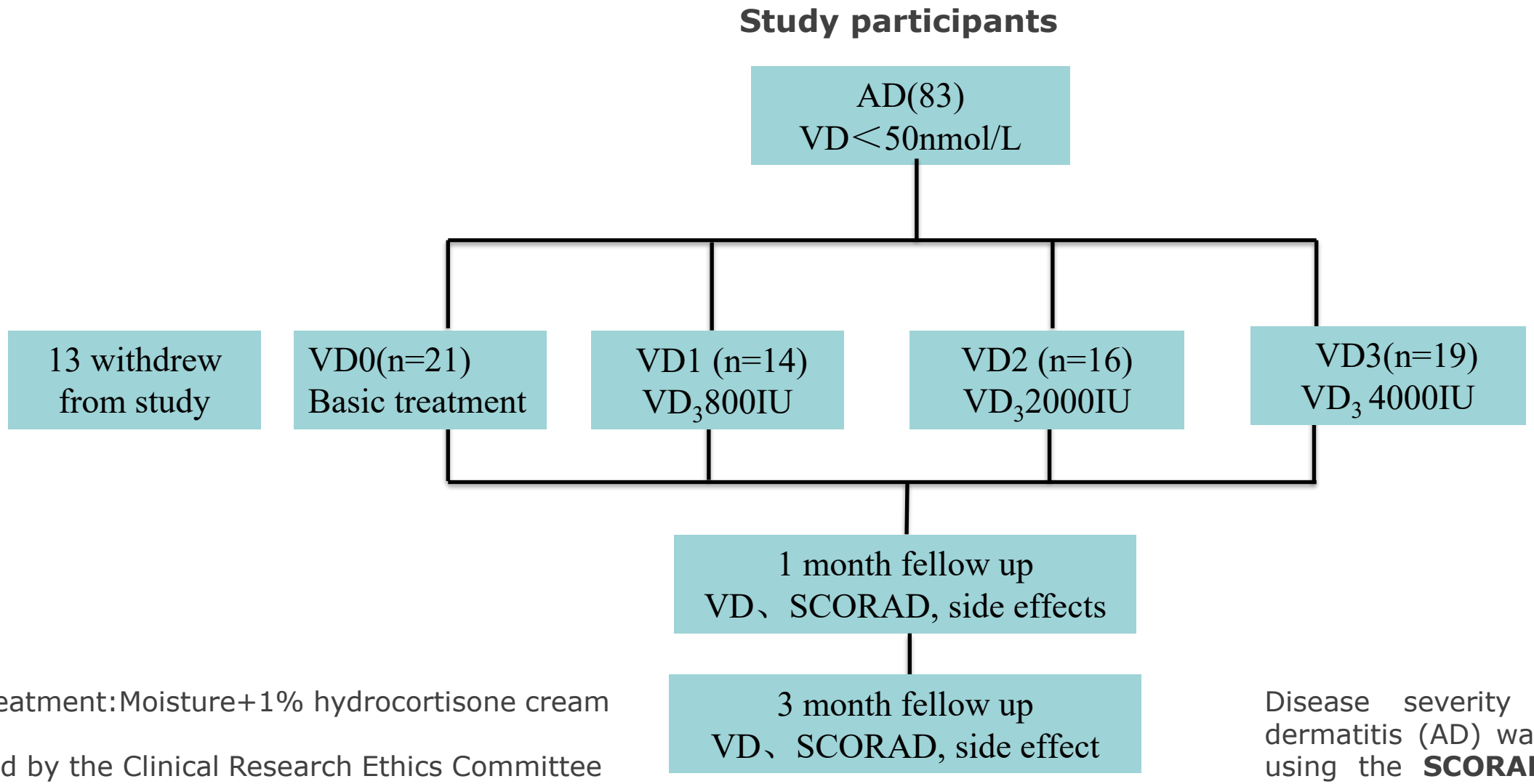
Subgroups: V0(no VD),VD1(800IU/d);VD2(2000IU/d);VD3(4000IU/d)

Follow-up timepoints: baseline, 1 month and 3 months.

Outcomes: Primary outcomes: objective SCORAD and serum VD levels;

Secondary outcomes: safety (liver/kidney function, Ca, Pi, PTH).

# Study Design




Basic treatment:Moisture+1% hydrocortisone cream

approved by the Clinical Research Ethics Committee of Chongqing Medical University

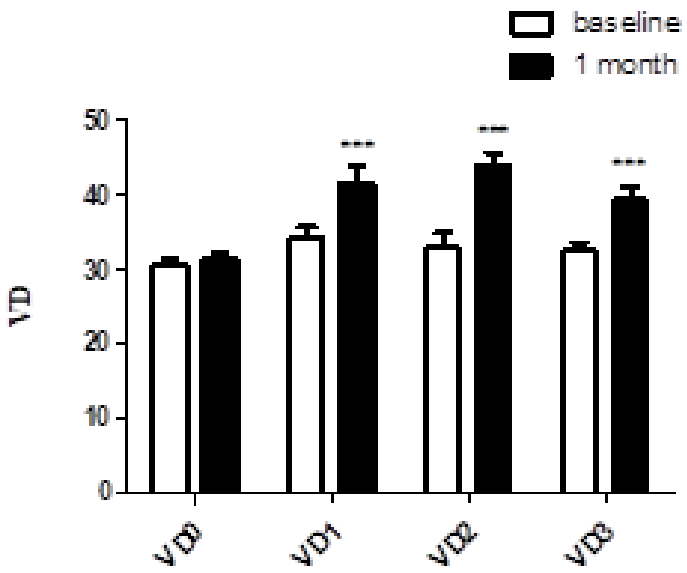
Disease severity in atopic dermatitis (AD) was assessed using the **SCORAD** (Scoring Atopic Dermatitis) index

## Outcomes

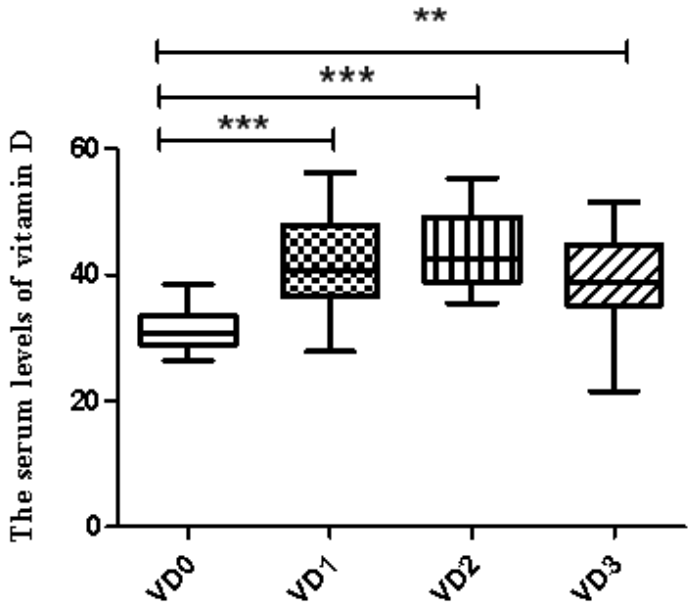
- Demographic characteristics of children receiving oral vitamin D supplementation

| | VD0 | VD1 | VD2 | VD3 | P |
|---|---|---|---|---|---|
| n | 21 | 14 | 16 | 19 | |
| Age | 5.12±2.08 | 4.4±1.25 | 5.59±2.13 | 5.29±2.15 | 0.3865 |
| Sex(M/F) | 11/10 | 7/7 | 6/10 | 10/9 | 0.8255 |
| Height | 107.4±14.22 | 105.7±9.74 | 110.7±14.62 | 109.1±13.49 | 0.5693 |
| Weight | 20.67±6.58 | 17.07±2.71 | 20.41±6.09 | 21.76±7.43 | 0.1632 |
| SCORAD | 46.92±12.27 | 42.37±11.11 | 45.14±10.70 | 51.86±11.87 | 0.1232 |
| VD | 30.57±4.05 | 34.24±5.36 | 32.94±7.68 | 32.53±4.85 | 0.2678 |
| $Ca^{2+}$ basline | 2.51±0.14 | 2.52±0.14 | 2.52±0.17 | 2.41±0.14 | 0.0617 |
| Pi baseline | 1.756±0.11 | 1.737±0.13 | 1.733±0.13 | 1.719±0.13 | 0.8177 |
| AKP | 199.7±29.42 | 190.4±34.35 | 207.1±40.82 | 190.4±41.57 | 0.4865 |
| PTH | 60.7±3.82 | 60.0±7.32 | 62.8±4.17 | 60.5±4.99 | 0.4052 |
| Compliance | 47.6% | 50% | 50% | 52.6% | 0.9699 |

- vitamin D levels after **1 month** VD supplementation




Vitamin D Levels in AD Children: Pre- vs. Post-Intervention Assessment




Vitamin D Status in Pediatric AD: Group-wise Comparison After 1-Month Intervention

**VD0组：31.52±3.44 nmol/L，0例**

**VD1组：41.61±6.61 nmol/L，2例**

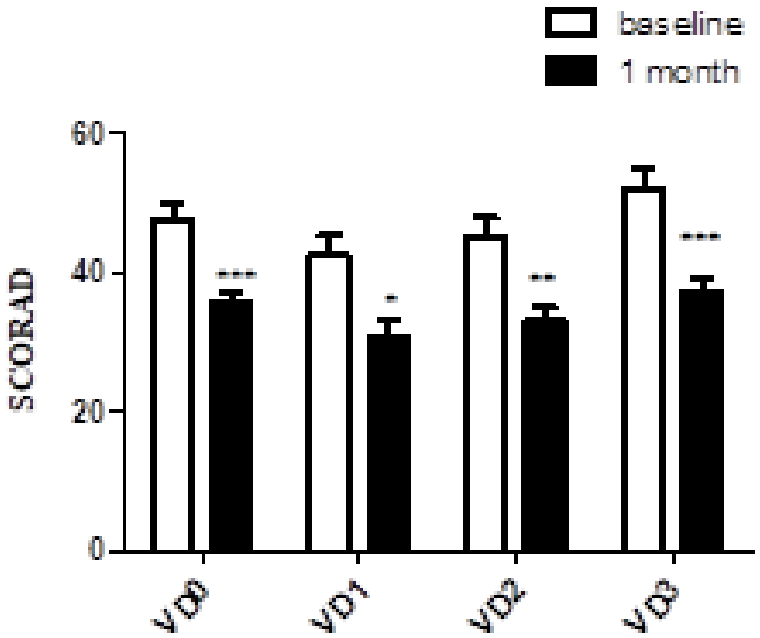
**VD2组：44.01±6.05 nmol/L，3例**

**VD3组：39.37±7.60 nmol/L，1例**

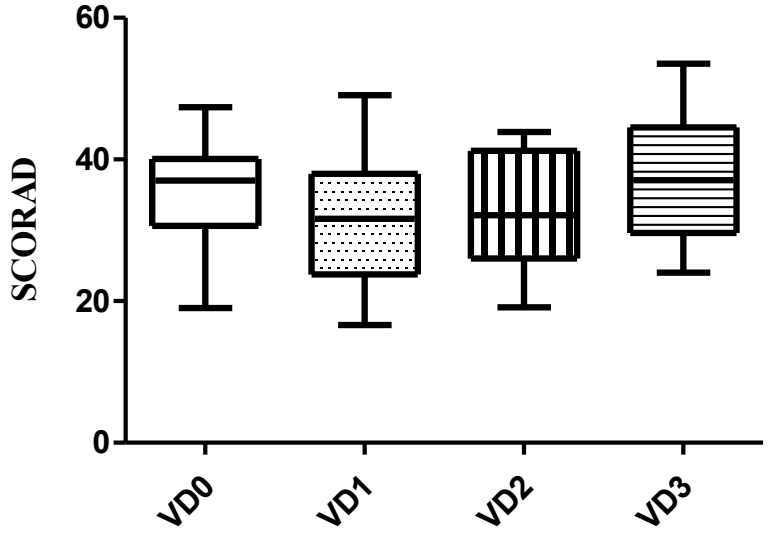
Vitamin D Levels by Group

# efficacy

- Disease severity: SCORAD changes after **1 month** of VD supplementation

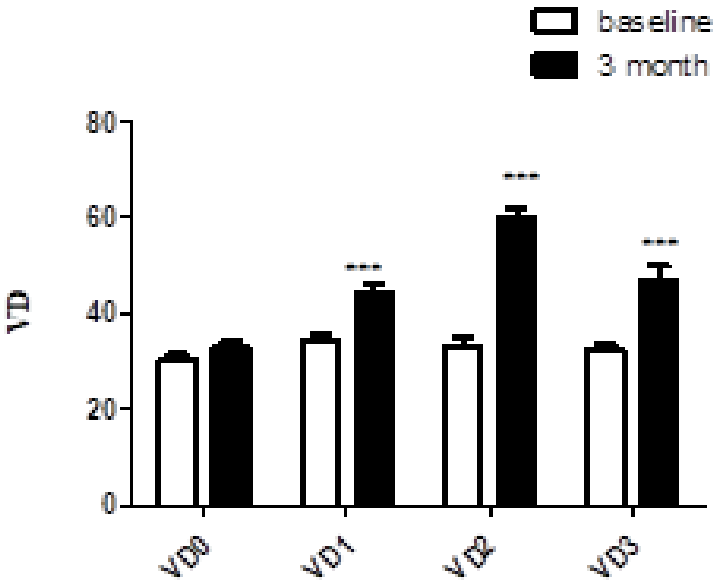



SCORAD Index: Pre- vs. Post-Intervention by Group

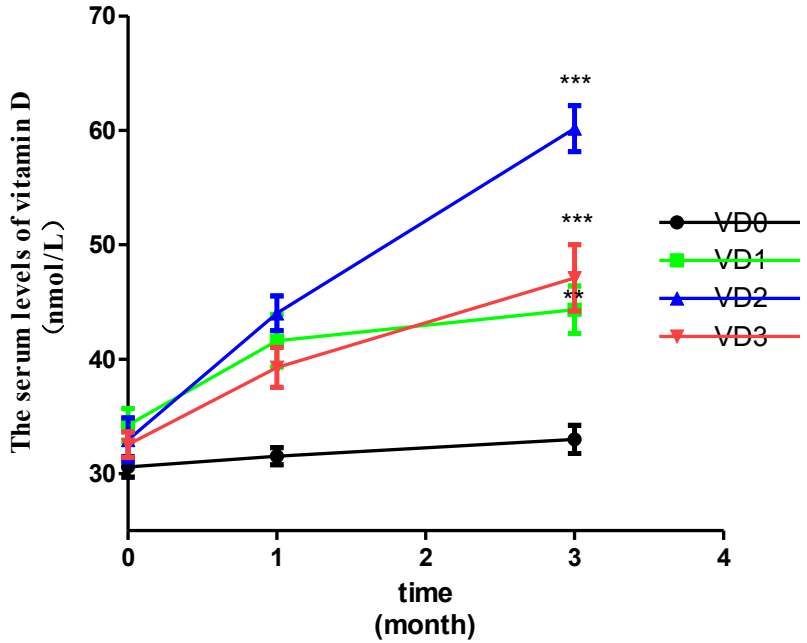



Group Comparison of SCORAD Scores Following a 1-Month Intervention

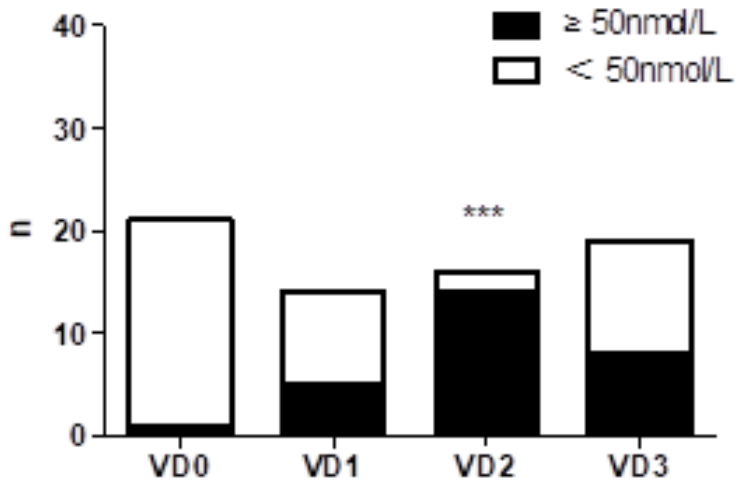
- vitamin D levels after **3 month** VD supplementation




Vitamin D Levels Before and After 3-Month Supplementation: Group Comparison

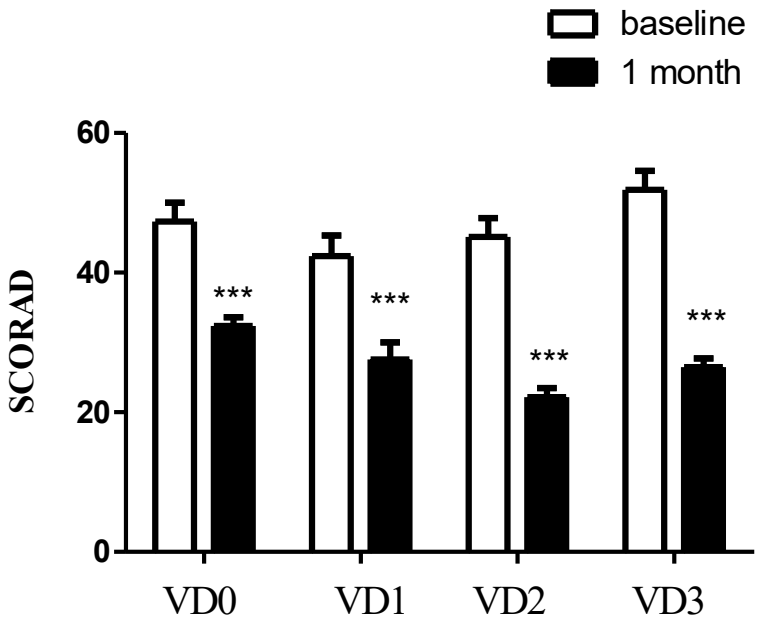



VD level Trends by Group: Baseline to 3-Month Follow-up

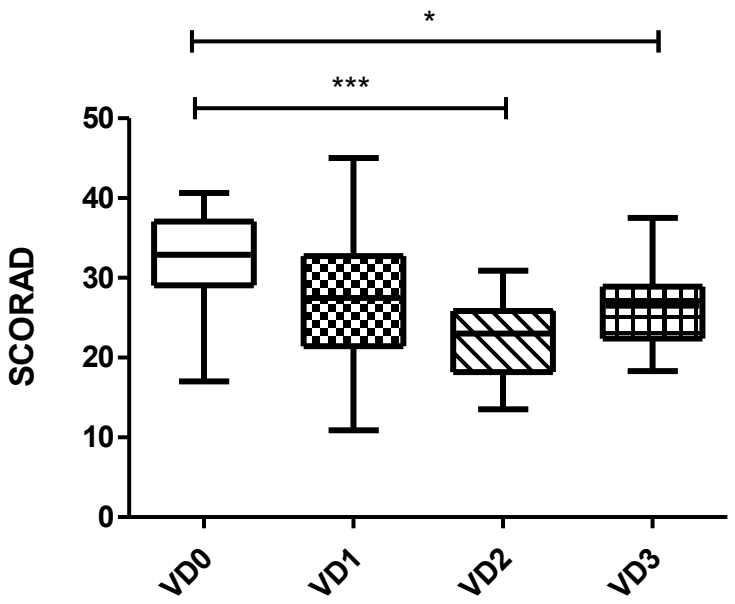



Achievement of Normal Vitamin D Status in AD Cohorts Post 3-Month Supplementation

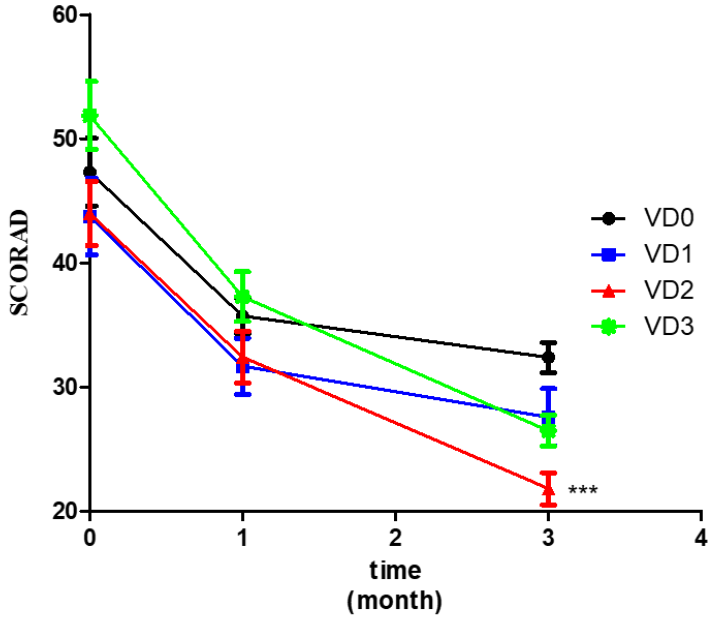
- Disease severity: SCORAD changes after **3 month** of VD supplementation




SCORAD Index at three months follow-up: Pre- vs. Post-Intervention by Group




Group Comparison of SCORAD Scores Following a 3-Month Intervention




SCORAD Trends by Group: Baseline to 3-Month Follow-up

## Safety

- Throughout the supplementation period, no significant adverse events were observed.
- Liver and kidney function remained normal in all AD children receiving oral vitamin D (VD).
- At doses of 800 IU and 2000 IU, VD supplementation had negligible effects on serum calcium, serum phosphorus, and parathyroid hormone (PTH) levels, with no significant differences in these parameters observed between pre-supplementation, 1-month, and 3-month timepoints.
- However, at the 4,000 IU dose:

Serum calcium levels rose significantly at 1 month, while PTH levels dropped notably during the same period. However, all fluctuations remained within normal ranges.

By 3 months, the body's self-regulatory mechanisms restored serum calcium and PTH to baseline levels, re-establishing homeostasis.

## Conclusion

Vitamin D supplementation is a well-tolerated, safe and effective adjuvant treatment for children with AD.

Oral supplementation with 2000IU per day may be  the most efficiency.

## Limitation

The sample size was relatively small.

The follow-up period was limited to three months, making it difficult to assess the long-term efficacy and safety of vitamin D supplementation in children with atopic dermatitis.

The absence of a placebo control group also limits the ability to fully evaluate the treatment effect.

## Acknowledgements

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# Thanks for your attention !

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