

# 1, 25–dihydroxyvitamin D<sub>3</sub> decreases the proinflammatory interleukin 17 serum levels

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## Background

Th17 cells, which are involved in innate and adaptive immunity, produce IL-17A main cytokine. IL-17A leads to a local inflammation and bone wasting. The proinflammatory IL-17A cytokine is involved in cardiovascular diseases, osteoporosis and/or infertility (1).

1,25-dihydroxyvitamin D<sub>3</sub> as a pleiotropic hormone plays a crucial role in inflammatory and immune responses. Its receptor (VDR) is present on monocytes/macrophages, T and B lymphocytes, neutrophils and dendritic cells (2, 3).

The effect of vitamin D<sub>3</sub> on inflammatory cytokine and chemokine serum levels was studied.

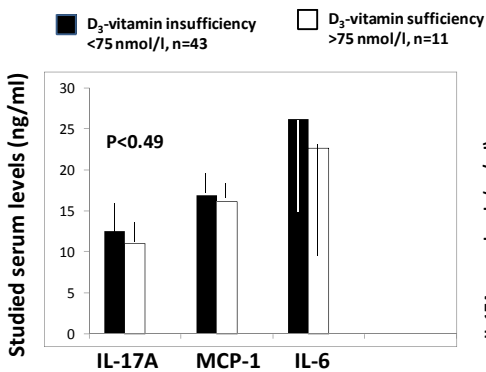
## Results

**1. Figure:** IL-17A levels were significantly lower in women with 1,25-dihydroxyvitamin D<sub>3</sub> sufficiency.

**2. Figure:** IL-17A levels correlated inversely with vitamin D<sub>3</sub> serum levels.

**3. Figure:** IL-17A levels correlated inversely with monocyte chemoattractant protein 1 (MCP-1) serum levels.

**4. Figure:** IL-17A levels correlated inversely with IL-6 serum levels.



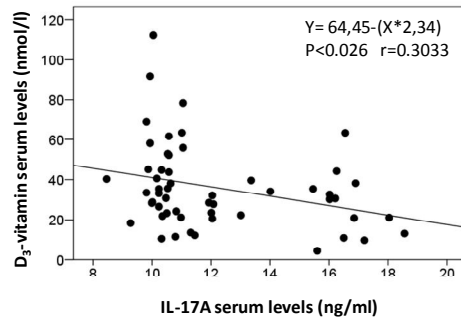
**Figure 1:** Proinflammatory cytokine (IL-17A, IL-6) and chemokine (MCP-1) serum levels were studied in 54 women according to vitamin D<sub>3</sub> serum levels.

## Patients and methods

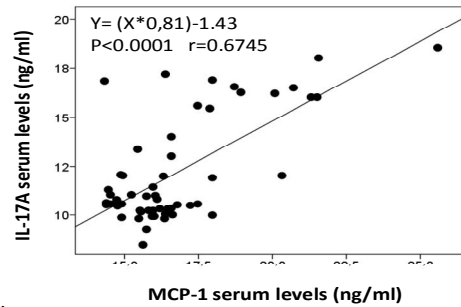
Proinflammatory cytokine and chemokine serum levels were investigated in 54 women (Table 1).

1, 25-dihydroxyvitamin D<sub>3</sub> serum levels were measured by chemiluminescence method (LIAISON, USA).

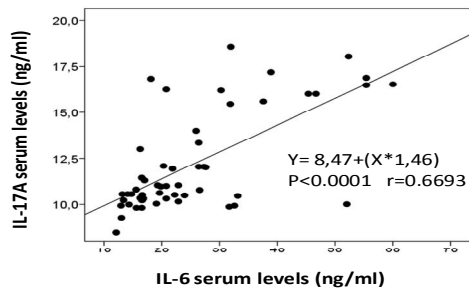
IL-17A, monocyte chemoattractant protein-1 (MCP-1) and IL-6 proinflammatory cytokines were measured by enzyme linked immunosorbent assay (ELISA).



**Figure 2:** IL-17A serum levels correlated inversely with vitamin D<sub>3</sub> serum levels in 54 women.



**Figure 3:** IL-17A serum levels correlated positively with MCP-1 (monocyte chemoattractant protein-1) serum levels in 54 women.



**Figure 4:** IL-17A serum levels correlated positively with IL-6 serum levels in 54 women.

## Clinical parameters

Parameters	D <sub>3</sub> -vitamin deficiency (n=18) <50 nmol/l	D <sub>3</sub> -vitamin insufficiency (n=25) 51-75 nmol/l	D <sub>3</sub> -vitamin sufficiency (n=11) >75 nmol/l	P-values
Age (years)	59±17	61±13	61±12	
BMI* (kg/m <sup>2</sup> )	29±5	29±6	29±6	
D <sub>3</sub> -vitamin (nmol/l)	16,84±6,06	35,08±5,79	68,95±44	
IL-17A (ng/ml)	13,35±2,9°	12,07±2,61	11±1,9°	0.033
MCP-1** (ng/ml)	17,35±2,9	16,62±2,07	16,18±1,23	
IL-6 (ng/ml)	26,11±12,66	26,25±12,23	22,68±13,52	

\*Body mass index (BMI) \*\*Monocyte chemoattractant protein-1 (MCP-1)

## Conclusions

1,25-dihydroxyvitamin D<sub>3</sub> exerted inhibiting effect on proinflammatory cytokine (IL-17A and IL-6) serum levels.

Vitamin D<sub>3</sub> deficiency was associated with higher IL-17A serum levels highlighting its influencing role in diseases characterized by inflammatory events.

The strong correlation between IL-17A and MCP-1 or IL-6 serum levels suggested their implication in the initiation of local inflammation, such as in vascular damage leading to cardiovascular diseases besides their bone wasting effect.

The results supported that vitamin D<sub>3</sub> supplementation can help to limit the inflammatory processes caused damages (4).

## References

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