

# Cellular data: Study suggests role for vitamin K2 in regulating inflammation

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05-Jun-2016 - Last updated on 06-Jun-2016 at 16:43 GMT

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**Vitamin K2 could block the production of pro-inflammatory molecules by human white blood cells, according to a new in vitro study.**

[The lab-based cellular research, backed with a grant from Norwegian vitamin K2 player NattoPharma, tested the potential for the firms' vitamin K2](#)

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mediators like TNF-alpha, IL-1a, and IL-1b by human immune cells known as macrophages.

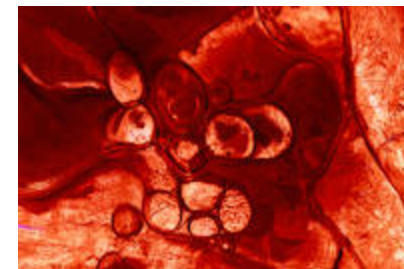
*“Our data show that vitamin K2 is effective to inhibit pro-inflammatory mediators in vitro. If the same effect can be seen in vivo, it will be very beneficial for people, who need to be on anti-inflammatory treatment,”* study co-author Dr Katarzyna Maresz, from the The International Science and Health Foundation, Poland, told NutraIngredients.

*“However, efficacy and the dosage of vitamin K2 to inhibit inflammatory markers in vivo needs to be established in future clinical trials,”* she said.

Hogne Vik, NattoPharma chief medical officer, added that the new data points to one possible mechanism for the clinical observations made for MK7 – *“where positive health effects associated with the diseases in blood vessels, diabetes and in the muscle/joint - system have been reported.”*

Vik told us NattoPharma do not have any plans for clinical trials specifically within the inflammatory field *“but will welcome any new initiatives.”*

However, Maresz noted that there are ‘many’ ongoing clinical trials set to evaluate the efficacy of vitamin K2 in cardiovascular and kidney fields.



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*“I believe that some trials will bring us data on the dosage and efficiency of MK-7 in relation to inflammatory markers,”* she said.

#### In vitro data

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The cells were pre-treated with a wide range of concentrations for between six and 30 hours before being 'stimulated' to produce an immune response by TLR agonists, and then the effect on immune biomarker production was measured.

*"When the cells were pre-treated up to six hours with MK-7 before treatment with TLR agonists, MK-7 did not inhibit significantly the production of TNF- $\alpha$  after the TLR activation. However, 30 hours pre-treatment of hMDMs with at least 10IM of MK-7 effectively and dose dependently inhibited the pro-inflammatory function,"* wrote the team.

They added that pre-treatment with 10 micromoles of MK-7 for 30 hours resulted in 20% inhibition of TNF-alpha production after lipopolysaccharide (LPS) activation, and 43% inhibition after macrophage-activating lipopeptide (MALP) activation.

Furthermore, activation of immune molecules associated with pathogens, known as pathogen-associated molecular patterns (PMPP), was reduced by 20% by vitamin K2 as MK-7. However, this was not statistically significant, they said.

Source: *Journal of Medicinal Food*

Published online ahead of print, doi: [10.1089/jmf.2016.0030](https://doi.org/10.1089/jmf.2016.0030)

*"Inhibition of TNF- $\alpha$ , IL-1 $\alpha$ , and IL-1 $\beta$  by Pretreatment of Human Monocyte-Derived Macrophages with Menaquinone-7 and Cell Activation with TLR Agonists In Vitro"*

Authors: Pan Min-Hsiung, *et al*

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