A117 IL-23 SPECIFIC TARGETING BY ACTIVE IMMUNISATION IMPROVES INFLAMMATION AND DESTRUCTION IN A MURINE MODEL OF RHEUMATOID ARTHRITIS

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Background Interleukin 23 (IL-23) is a pro-inflammatory cytokine known to be essential for the differentiation of the Th17 lymphocytes, a subtype of T lymphocyte implied in auto-immunity. Its subunit, IL-23 p19, is specific of this cytokine. We had previously demonstrated for IL-1 β and tumour necrosis factor α , that active immunisation against these cytokines could be protective in animal models of arthritis.

Objectives The aim of this study was to evaluate the effect of two vaccines targeting the IL-23 p19 subunit, IL-23-K1 and IL-23-K2, on collagen-induced arthritis (CIA), a model of rheumatoid arthritis.

Methods Using bioinformatics, we defined two peptides in IL-23 p19. Each peptide was coupled with keyhole limpet haemocyanin (KLH). Anti-murine IL-23 immunisation was performed by injecting intramuscularly IL-23-K1 or IL-23-K2 formulated in incomplete Freund adjuvant (IFA), four times

(D0, 7, 28, 49) in DBA/1 mice. Control groups received KLH or phosphate buffered saline (PBS) at the same dates. CIA was induced by two subcutaneous injections of bovine type II collagen, the first at day 40 in complete Freund adjuvant, the second at day 61 in IFA. Anti-IL-23 and anti-KLH antibody levels were assessed by ELISA. Pro-inflammatory and anti-inflammatory cytokines were quantified by qRT-PCR on the spleen and the synovium.

Results The clinical scores show that mice treated with IL-23-K1 develop less arthritis than the negative controls ($p < 0.05$). Mice vaccinated by IL-23-K1 produced more anti-IL-23 antibodies than the one vaccinated by KLH ($p < 0.001$). mRNA quantification showed that the IL-23-K1 vaccination led to an increase of IL-10 in the spleen ($p < 0.05$ vs KLH), without any effect on IL-17 level. Histology examination showed that IL-23-K1 permitted a strong decrease of the joint destruction and inflammation ($p < 0.01$ vs KLH and $p < 0.001$ vs PBS).

Conclusion These data show that targeting IL-23 p19 using a vaccination strategy may be efficient in CIA.