ARTHRITIS AND OSTEOARTHRITIS

Antigen (mBSA)-induced arthritis (AIA)

In vivo mice model of arthritis are widely used to investigate mechanisms involving joint inflammation and damage. Despite several limitations, current models of arthritis have been important to identify pathogenic mediators, immune cell subsets and stromal cell responses that determine disease onset, progression, and severity. The AIA model does not feature the breach of immune tolerance that results in systemic polyarticular disease as seen in rheumatoid arthritis. Rather, onset of joint inflammation is immediate and confined to the antigen (mBSA) challenged joint. Development of AIA is dependent on CD4+ T-lymphocytes, and the kinetics of synovial leukocyte infiltration that leads to cartilage and bone erosion is highly reproducible[1,2].

Species: *Mus musculus* (C57/BL6, CD1, BalbC, Swiss)
Number of animals/group: 10 animals
Route of administration: upon request
Treatment mode: upon request
Main Read-outs: Hindpaw withdrawal response (mechanical stimulus), locomotor activity (open field and rotarod) and articular neutrophil infiltration.
Facultative read-outs: Joint swelling, articular cytokine release contents, histopathologial evaluations, immunohistochemical analysis.

Validation Data

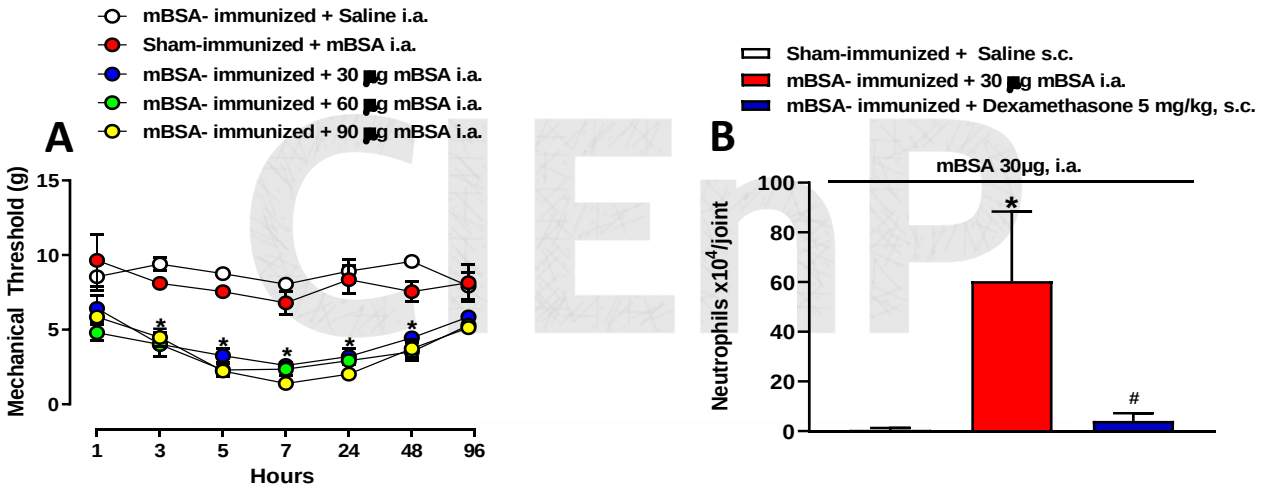

Figure 1. Mechanical articular hyperalgesia induced by 30, 60 and 90 µg mBSA i.a. in mBSA- immunized or sham-immunized mice, assessed by electronic von Frey, over 96 hours (A). Neutrophil recruitment to the knee joint of mBSA- immunized or sham-immunized mice 5 hours after the 30 µg mBSA i.a. challenge. Dexamethasone was used as a positive control. Two-way analysis of variance (A) and one-way analysis of variance (B) with Bonferroni post hoc test. * $p<0.05$ versus mBSA- immunized + saline i.a. and sham-immunized + mBSA i.a. (A); * $p<0.05$ versus mBSA- immunized + saline i.a. and $^{\#}p<0.05$ versus and mBSA-immunized + 30 µg mBSA i.a. (B).

To avoid bias and to allow reproducibility all in vivo experiments follow the ARRIVE guidances[3]. Mice colony from Charles River Laboratories is breed and maintained in SPF conditions. The project includes study plan and final report. The experimental procedures was previously approved by the CIEnP Committee on the Ethical Use of Animals.

References:
[1]Wong PK, Quinn JM, Sims NA, van Nieuwenhuijze A, Campbell IK, Wicks IP. Interleukin-6 modulates production of T lymphocyte-derived cytokines in antigeninduced arthritis and drives inflammationinduced osteoclastogenesis. Arthritis Rheumatoid, 54:158–168, 2006;
[2]Jones GW, Hill DG, Sime K, Williams AS. In Vivo Models for Inflammatory Arthritis. Methods in Molecular Biology, 1725:101-118, 2018;
[3]Kilkenny C, Browne WJ, Cuthill IC, Emerson M, Altman DG. Animal research: reporting in vivo experiments: The ARRIVE guidelines. PLoS Biol. 8 (6): e1000412, 2010.

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