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In vivo Animal Models

Multiple Sclerosis

EAE-Induced Mouse Model

Experimental autoimmune encephalomyelitis (EAE) shows many pathological similarities to Multiple Sclerosis (MS) and is therefore often used as model to mimic MS by injecting Myelin-Oligodendrocyte-Glycoprotein (MOG) in combination with pertussis toxin (PTX).

The EAE model is widely used as inducible MS model presenting commonly observed MS pathologies like demyelination, neuroinflammation as well as motor strength and coordination.

C57Bl/6 mice are treated with a 2-day MOG and PTX regime. After 2 weeks, animals were further treated with Fingolimod or vehicle and clinical signs, motor coordination and spinal cord neuropathology were evaluated after another 2 weeks.

- Clinical signs (EAE score)
- Reduced Activity/rearing
- Reduced muscle strength
- Motor deficits
- Reduced myelination
- Neuroinflammation
- Increased neurofilament-light chain levels

Figure 1:
Clinical signs of EAE-induced C57BL/6 mice during the 5 weeks lasting study. Clinical score of Sham-Vehicle, EAE-Vehicle and EAE-Fingolimod treated mice. n = 13-16 per group; Mean ± SEM; Two-way Repeated Measures ANOVA with Bonferroni's multiple comparisons post hoc test; *p<0.05; **p<0.01; ***p<0.001. *EAE-Vehicle vs. Sham-Vehicle; #EAE-Fingo vs. EAE-Vehicle. Fingo = Fingolimod.

Clinical Signs

Figure 1:

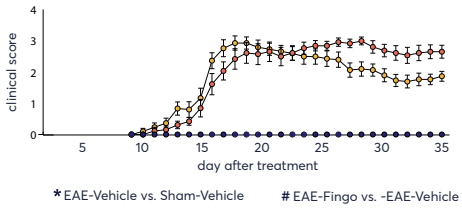


Figure 2:
Wire suspension test of EAE-induced C57BL/6 mice 5 weeks after treatment. Time in seconds until animals fall off the wire. n = 13-16 per group; Mean + SEM; Kruskal-Wallis One-way ANOVA with Dunn's multiple comparisons post hoc test; ***p<0.001. Fingo = Fingolimod.

Wire Suspension

Figure 2:

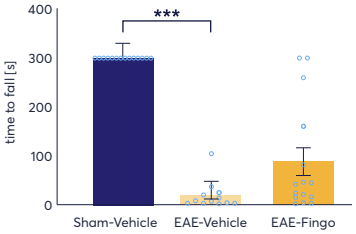
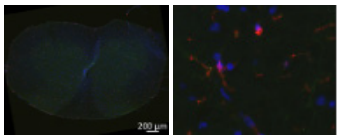


Figure 3:
Neuroinflammation in the cervical spinal cord. Representative images showing leukocytes (CD45), activated microglia (Iba1) and DAPI (nuclei). Graph shows immunoreactive area of Iba1 in the white matter of cervical spinal cord. (n = 6-8 per group). One-way ANOVA with Dunn's multiple comparisons post hoc test. Mean+SEM. **p<0.01; ***p<0.001.

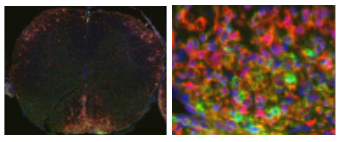
Sham

Figure 3: **DAPI, CD45, Iba1**



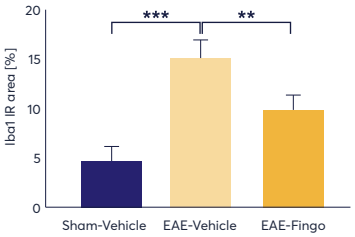
EAE

Figure 3: **DAPI, CD45, Iba1**



Activated Microglia in Cervical Spinal Cord

Figure 3:



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Discovery

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126-29-MultipleSclerosisEAE-EN (04/2024)