Application note

EAE induction using MOG35-55 : impact of CFA amount

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Introduction

Experimental autoimmune encephalomyelitis (EAE) is one of the most popular animal models of multiple sclerosis (MS). Mouse models of demyelinating diseases have been useful in both the demonstration of T cell-mediated demyelination and in the characterization of the pathogenesis of immune-mediated demyelinating disease. EAE is a CD4 + T cell-mediated, demyelinating autoimmune disease of the CNS that is characterized by mononuclear cell infiltration. EAE can be induced by various antigens including MOG35-55, a peptide derived from the Myelin Oligodendrocyte Glycoprotein, a structural protein in the myelin sheath. The injection of this peptide emulsified with CFA in mice induces a production of anti-MOG antibodies that cause demyelination and a chronic EAE. The purpose of this study was to investigate the influence of CFA amount on EAE induction.

Materials & methods

For this experience twenty C57BL/6 mice were acclimatized for 12 days before immunization on Day 0. They have been treated in strict adherence with the European Community guidelines for laboratory animal handling and with the guidelines established by the French Council on animal care “Guide for the Care and Use of Laboratory Animals”. They had a free access to water and food and a room with controlled temperature and a 12h light/12h darkness cycle.

For the immunization the mice were divided in 4 experimental groups. A volume of 200µL with below emulsion preparations were injected at Day 0 in s.c.. The pertussis toxin (300ng/kg) was injected at Days 0 and 2 in i.p.

Group	Emulsion composition (200µL)
G1	200µg MOG35-55 + 200µg CFA
G2	200µg MOG35-55 + 500µg CFA
G3	200µg MOG35-55 + 800µg CFA
G4 (control)	800µg CFA

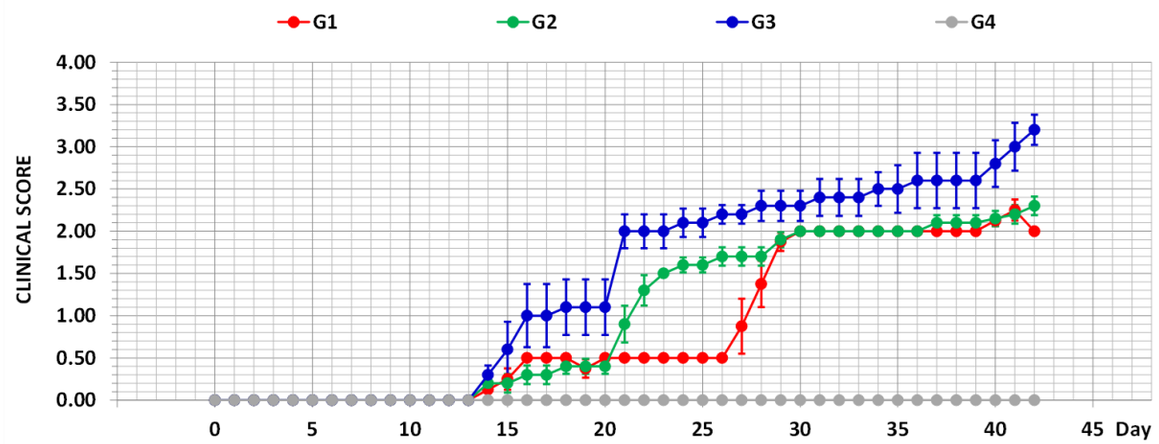
Emulsions were prepared by SB-PEPTIDE (catalog reference SB036, « premade EAE induction kit ») using mouse MOG35-55 (catalog reference SB023).

To classify clinical signs during the progression of EAE, observations have been made every day during 6 weeks using the clinical score indicated below.

CLINICAL SCORE
0.0 – No symptoms
0.5 – Partial paralysis of the tail
1.0 – Total paralysis of the tail
1.5 – Dragging the hip, but fully moving the hindlimb
2.0 – Partial paralysis of the two hindlimbs
2.5 – Total paralysis of one hindlimb and partial of the second limb
3.0 – Total paralysis of the two hindlimbs
3.5 – Total paralysis of the two hindlimbs and column arched, but still moving the forelegs
4.0 – Total paralysis of the hindlimbs and partial paralysis of forelimbs (end-point)
5.0 – Decreased responsiveness (end-point) and death

Results

The results show that the mean clinical score of the three tested groups of mice started to increase, 14 days after immunization, from 0.0 to a maximum value over 2.0, while it remained null for all the animals of the G4 control group. After Day 20, the G3 mice have seen their clinical score to increase to 3.0 for the next 20 days.



Conclusion

These results indicate that the EAE progression appears to occur more rapidly and more potently when the CFA amount was increased.