tolerated. There is thus a need for alternative therapies for MS which are effective at treating MS and at alleviating or reducing the symptoms of MS.

SUMMARY OF THE INVENTION

The present inventors have identified a number of peptides derivable from myelin oligodendrocyte glycoprotein which can be presented by fixed antigen presenting cells to T-cells. These peptides may be useful in the prevention and/or treatment of demyelinating diseases such as multiple sclerosis.

~~In a first aspect, therefore, the present invention provides~~Disclosed is a peptide which is capable of binding to an MHC molecule *in vitro* and being presented to a T cell without antigen processing (i.e. an apitope), which comprises a portion of the region 40-60 of myelin oligodendrocyte glycoprotein (MOG).

In a first aspect, the present invention provides a peptide which is capable of binding to an MHC molecule in vitro and being presented to a T cell without antigen processing, and which is selected from the following myelin oligodendrocyte glycoprotein (MOG) peptides: MOG 41-55 (SEQ ID NO:1), 43-57 (SEQ ID NO:2), 44-58 (SEQ ID NO:3) and 45-59 (SEQ ID NO:4) for use in the treatment and /or prevention of a demyelinating disease

The peptide may comprise a portion of the region 41-59 of myelin oligodendrocyte glycoprotein.

The peptide may be selected from the following myelin oligodendrocyte glycoprotein peptides: MOG 41-55, 43-57, 44-58 and 45-59.

The peptide may be MOG 41-55.

~~In a second aspect there is provided a peptide according to the first aspect of the invention for use in the treatment and/or prevention of a demyelinating disease.~~

In a ~~third~~ second aspect, the present invention provides a pharmaceutical composition comprising one or more peptide(s) according to the first aspect of the invention for use in the treatment and/or prevention of a demyelinating disease.

Also disclosed is a method for treating and/or preventing a demyelinating disease in a subject in need of same which comprises the step of administering a peptide according to the first aspect of the invention to the subject.

In a ~~fourth~~ third aspect, the present invention relates to the use of a peptide according to the first aspect of the invention in the manufacture of a medicament for use in the prevention and/or treatment of a demyelinating disease.

In connection with the ~~second~~first, and ~~fourth~~ third aspects of the invention, the disease may be multiple sclerosis.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 is a graph to show the peptide specificity of various MOG-specific hybridoma clones.

Figure 2 shows the results of a recall proliferation assay to test the effect of treatment of mice with ROK5 (MOG 41-55) prior to immunisation with MOG35-55 followed by an *in vitro* recall with MOG35-55.

Figure 3 shows the cytokine profiles from supernatants from splenocytes from mice pretreated *in vivo* with ROK5 or PBS and immunisation with MOG35-55 followed by an *in vitro* recall with MOG35-55.

Figure 4 schematically illustrates the *in vivo* EAE prevention protocols.

Figure 5 shows that the peptide MOG35-55 induces EAE in a murine model.

Figure 6 shows that both mouse and human ROK5 apitopes can reduce the severity of the disease induced by MOG35-55.

Figure 7 shows that huROK5 reduced the severity of disease and caused a delay in the peak of disease burden.

CLAIMS

1. A peptide which is capable of binding to an MHC molecule *in vitro* and being presented to a T cell without antigen processing, and which comprises a portion of the region 40-60 of myelin oligodendrocyte glycoprotein (MOG).

2. A peptide according to claim 1 or 2, which is selected from the following myelin oligodendrocyte glycoprotein peptides: MOG 41-55, 43-57, 44-58 and 45-59.

3. A peptide according to claim 2 which is MOG 41-55.

4. A peptide according to any preceding claim, for use in the treatment and/or prevention of a demyelinating disease.

5. A peptide according to claim 4, wherein the disease is multiple sclerosis.

6. A pharmaceutical composition comprising one or more peptide according to any of claims 1 to 5.

7. The use of a peptide according to any of claims 1 to 5 in the manufacture of a medicament for use in the prevention and/or treatment of a demyelinating disease.

8. The use according to claim 7, wherein the disease is multiple sclerosis.

CLAIMS

1. A peptide which is capable of binding to an MHC molecule *in vitro* and being presented to a T cell without antigen processing, and which is selected from the following myelin oligodendrocyte glycoprotein (MOG) peptides: MOG 41-55 (SEQ ID NO:1), 43-57 (SEQ ID NO:2), 44-58 (SEQ ID NO:3) and 45-59 (SEQ ID NO:4) for use in the treatment and /or prevention of a demyelinating disease.

2. A peptide for use according to claim 1 which is MOG 41-55 (SEQ ID NO:1).

3. A peptide for use according to claim 1 or 2, wherein the disease is multiple sclerosis.

4. A pharmaceutical composition comprising the peptide according to claim 1 or 2 for use in the treatment and/or prevention of a demyelinating disease.

5. The use of a peptide according to claim 1 or 2 in the manufacture of a medicament for use in the prevention and/or treatment of a demyelinating disease.

6. The use according to claim 5, wherein the disease is multiple sclerosis.