

## Data Sheet

<b>Product Name:</b>	Myelin Basic Protein (MBP) (68-82), guinea pig	
<b>Cat. No.:</b>	CS-0025318	
<b>CAS No.:</b>	98474-59-0	
<b>Molecular Formula:</b>	C71H113N23O28	
<b>Molecular Weight:</b>	1736.79	YGSLPQKSQRSQDEN
<b>Target:</b>	Others	
<b>Pathway:</b>	Others	
<b>Solubility:</b>	H2O	

### BIOLOGICAL ACTIVITY:

Myelin Basic Protein (MBP) (68-82), guinea pig is a fragment of myelin basic protein (MBP). **In Vitro:** Multiple sclerosis is the most common autoimmune disorder affecting the central nervous system. In this study, whole blood samples are analyzed for activation capacity and the activatability of CD4<sup>+</sup> and CD8<sup>+</sup> T-lymphocytes by human total myelin basic protein (MBP), human MBP 104-118 fragment, and guinea pig MBP (68-82) fragment. A significant increase in the number of activated T-lymphocytes was observed in the whole blood. For all three tested MBPs, this increase in activated CD4<sup>+</sup> and CD8<sup>+</sup> T-lymphocytes is statistically significant ( $p < 0.01$ ). However, this increase in activated T-cells is most prominent following incubation with human total MBP, followed by human 104-118 fragment; the smallest increase is observed following incubation with guinea pig MBP (68-82) fragment (human total MBP > huMBP-104-118 > guinea pig MBP (68-82))<sup>[1]</sup>. **In Vivo:** Whether pretreatment with bee venom acupuncture (BVA) from the same day of MBP (68-82) immunization can affect the induction and progression of experimental autoimmune encephalomyelitis (EAE) and weight loss is examined. At 5-9 days after immunization, rats in the myelin basic protein (MBP) group start displaying partial loss of tail tonus (clinical signs, 0.5) in a freely moving environment. At 10-16 days after immunization, most of the rats in the MBP group display more severe symptoms of neurological deficit including paraparesis of the hindlimb, paraplegia, tetraparesis, and tetraplegia. In contrast, rats in the MBP + BVA group display relatively slight neurological deficits in a dose-dependent manner at 11-15 days after immunization, compared to the rats in the MBP group. The onset of symptoms is slightly delayed (BVA 0.8 mg/kg, 6.4±0.6 days) and the maximal clinical score is markedly decreased (BVA 0.25 mg/kg, 3.7±0.2; BVA 0.8 mg/kg, 2.8±0.3), compared to that in the MBP group. At this time, the mean body weight of rats in the MBP group is decreased as compared to that of rats in the normal group, but it is significantly increased in rats of the MBP + BVA group as compared to rats in the MBP group<sup>[2]</sup>.

### PROTOCOL (Extracted from published papers and Only for reference)

**Kinase Assay:** <sup>[1]</sup>For each individual, the whole blood sample is typically divided into six 1 mL aliquots/tubes. Concanavalin A is added to tube 1 (positive control). Tube 2 is left untreated. Tube 3 is treated with human albumin as a negative control. Human total MBP, human MBP 104-118 fragment and guinea pig MBP (68-82) are added to tubes 4, 5 and 6, respectively. All proteins are added to a final concentration of 2 µg/mL. All experiments (incubations and flow cytometric analysis) are performed in duplicate for each subject <sup>[1]</sup>.

#### Animal Administration: <sup>[2]</sup>Rats<sup>[2]</sup>

Ten-week-old **female Lewis rats** are divided into the following two experimental groups: BVA-pretreated (every 3 days from 20 min before immunization) and BVA-posttreated (daily from days 10-15 after immunization) groups. Each experimental group is subdivided into the following five groups: normal [saline, subcutaneous (s.c.)+saline, s.c.], MBP [250 µg of myelin basic protein MBP (68-82), s.c.+saline, s.c., ST36 acupoint], MBP+BVA 0.25 [250 µg of MBP (68-82), s.c.+0.25 mg/kg body weight of BV, s.c., ST36 acupoint], MBP+BVA 0.8 [250 µg of MBP (68-82), s.c.+0.8 mg/kg body weight of BV, s.c., ST36 acupoint], and BVA alone [saline, s.c.+0.8 mg/kg body weight of BV, s.c., ST36 acupoint] groups. EAE is induced with an emulsion containing 250 µg of MBP (68-82) and 100 µg of

Mycobacterium M. tuberculosis per mL of incomplete Freund's adjuvant. A total of 0.2 mL of this emulsion is injected s.c. into the two hind footpads of rats except for those in the normal group and BVA alone group. Additionally, rats receive intraperitoneal (i.p.) injections of 200 ng of pertussis toxin on days 0 and 2. Rats in the normal group are treated with saline alone instead of MBP (68-82) peptide, pertussis toxin, or BVA<sup>[2]</sup>.

### References:

- [1]. Arneth B. Early activation of CD4<sup>+</sup> and CD8<sup>+</sup> T lymphocytes by myelin basic protein in subjects with MS. J Transl Med. 2015 Nov 2;13:341.
- [2]. Lee MJ, et al. Bee Venom Acupuncture Alleviates Experimental Autoimmune Encephalomyelitis by Upregulating Regulatory T Cells and Suppressing Th1 and Th17 Responses. Mol Neurobiol. 2016 Apr;53(3):1419-1445.

### CAIndexNames:

L-Asparagine, L-tyrosylglycyl-L-seryl-L-leucyl-L-prolyl-L-glutaminy-L-lysyl-L-seryl-L-glutaminy-L-arginyl-L-seryl-L-glutaminy-L- $\alpha$ -aspartyl-L- $\alpha$ -glutamyl-

### SMILES:

[YGSLPQKSQRSQDEN]

**Caution: Product has not been fully validated for medical applications. For research use only.**

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