



## ANTI-MELANOCORTIN-3 RECEPTOR (MC3-R)

Developed in Rabbit  
IgG Fraction of Antiserum

Product Number **M 4937**

### Product Description

Anti-Melanocortin-3 Receptor (MC3-R) is developed in rabbit using a synthetic peptide corresponding to the N-terminal region of mouse melanocortin-3 receptor (MC3-R) (amino acids 15-33, with C-terminally added lysine), conjugated to keyhole limpet hemocyanin (KLH) as immunogen. This sequence is highly conserved in mouse MC3-R (89% identity). Whole antiserum is fractionated and then further purified by ion-exchange chromatography to provide the IgG fraction of antiserum that is essentially free of other rabbit serum proteins.

Anti-Melanocortin-3 Receptor (MC3-R) recognizes rat MC3-R (40 kDa). Applications include immunoblotting. Staining of MC3-R in immunoblotting is specifically inhibited with MC3-R immunizing peptide (rat, amino acids 15-33, with C-terminally added lysine).

The melanocortin (MC) peptides are regulatory peptides derived by post-translational processing of the larger pro-opiomelanocortin (POMC) precursor, and include the adrenocorticotrophic hormone (ACTH) and the melanocyte stimulating hormones ( $\alpha$ -,  $\beta$ - and  $\gamma$ -MSH).<sup>1</sup> The melanocortins are produced primarily in the anterior and intermediate lobes of the pituitary, in the arcuate nucleus of the hypothalamus, and to a lower level in various other peripheral tissues.<sup>1-3</sup> In addition to their well established melanotropic and adrenocorticotrophic actions, these peptides have been reported to exert a broad variety of physiological actions including those related to central neural function such as behavior, memory, cognition, and regulation of feeding.<sup>1-5</sup>

Melanocortin peptides mediate their action through G-protein coupled receptors. Five melanocortin receptors (MC-Rs) are known to exist. These include the melanocortin receptors MC1-R to MC5-R.<sup>6</sup> The melanocortin receptors are differentially distributed and expressed in the brain and various tissues in the periphery.

MC3-R is a 360 amino acid transmembrane protein belonging to the G-protein coupled receptor family.<sup>7</sup> The melanocortin-3 receptor (MC3-R) is expressed

## Product Information

primarily in the adult central nervous system at high levels in a restricted number of neurons of the hypothalamus and the limbic system.<sup>8</sup> The expression of the MC3-R in the developing rat brain increases suggesting that this receptor may mediate the neurotrophic actions of the melanocortin peptides.<sup>9</sup> The MC3 receptor is also found in the gut and placenta, in adipose tissue and skeletal muscle.<sup>7,8</sup>

The MC3 receptor has been proposed to mediate the actions of MSH, in particular those of  $\alpha$ -MSH and  $\gamma$ -MSH peptides. MC3-R appears to play a central role in mediating the effect of the melanocortin system on energy homeostasis.<sup>10</sup>  $\alpha$ -MSH or synthetic agonists cause anorexia and weight loss. Agouti-related protein (AGRP), a physiological antagonist of MC3-R and MC4-R, can induce hyperphagia and obesity. MC3-R is thought to regulate fat stores by a metabolic pathway. MC3-R knockout mice (MC3-R<sup>-/-</sup>) have increased fat mass, but not high body mass index, are hyperleptinaemic and develop mild hyperinsulinaemia.<sup>10</sup> In contrast to MC3-R, MC4-R primarily controls food intake, suggesting that both MC3 and MC4 receptors may play a complementary role in weight control.<sup>11</sup>

### Reagent

Anti-Melanocortin-3 Receptor (MC3-R) is supplied as 0.2 ml of IgG fraction of antiserum in 0.01 M phosphate buffered saline, pH 7.4, containing 15 mM sodium azide.

### Precautions and Disclaimer

Due to the sodium azide content, a material safety data sheet (MSDS) for this product has been sent to the attention of the safety officer of your institution. Consult the MSDS for information regarding hazardous and safe handling practices.

### Storage/Stability

For continuous use, store at 2-8 °C for up to one month. For prolonged storage, freeze in working aliquots at -20 °C. Repeated freezing and thawing is not recommended. Storage in "frost-free" freezers is also not recommended. If slight turbidity occurs upon prolonged storage, clarify the solution by centrifugation before use. Working dilution samples should be discarded if not used within 12 hours.

### Product Profile

A minimum working dilution of 1:2,000 is determined by immunoblotting, using a rat brain homogenate extract.

Note: In order to obtain best results in different techniques and preparations we recommend determining optimal working dilutions by titration test.

### References

1. De Wied, D., and Jolles, J., *Physiol. Rev.*, **62**, 977 (1982).
2. Debold, C.R., et al., *Mol. Endocrinol.*, **2**, 862 (1988).
3. O'Donohue, T.L., and Dorsa, D.M., *Peptides*, **3**, 353 (1982).
4. Fan, B.A., *Nature*, **385**, 165 (1997).
5. Schwartz, M.W., *Nature*, **404**, 661 (2000).
6. Cone, R.D., et al., *Recent Prog. Hormone Res.*, **51**, 287 (1996).
7. Gantz, I., et al., *J. Biol. Chem.*, **268**, 8246 (1993).
8. Roselli-Reh fuss, L., et al., *Proc. Natl. Acad. Sci. USA*, **90**, 8856 (1993).
9. Xia, Y., and Wikberg, E., *Neuropharmacol.*, **36**, 217 (1997).
10. Chen, A.S., et al., *Nat. Genet.*, **26**, 8 (2000).
11. Raffin-Sanson, M.L., and Bertherat, J., *Eur. J. Endocrinol.*, **144**, 207 (2001).

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