



Committee for Orphan Medicinal Products

Public summary of positive opinion for orphan designation of peptides mimicking antigen receptors on autoimmune B cells and autoimmune T cells associated with myasthenia gravis for the treatment of myasthenia gravis

On 9 November 2009, orphan designation (EU/3/09/689) was granted by the European Commission to CuraVac Europe SPRL, Belgium, for peptides mimicking antigen receptors on autoimmune B cells and autoimmune T cells associated with myasthenia gravis for the treatment of myasthenia gravis.

What is myasthenia gravis?

Myasthenia gravis is a disease that leads to muscle weakness and tiredness. It is caused by the immune system (the body's natural defences) producing abnormal antibodies (types of proteins) that damage proteins called 'acetylcholine receptors' on the surface of muscle cells. For a muscle to contract, a substance called 'acetylcholine' is released from a nerve and attaches to the acetylcholine receptors on the muscle cells. In myasthenia gravis, because of the damage to these receptors, the muscles are not able to contract as well as normal.

In myasthenia gravis, the muscles involved in swallowing and those around the eyes are commonly affected first, causing difficulty in swallowing and the eyelids to droop. Muscle weakness typically worsens towards the end of the day and after exercise.

In most patients, the abnormal antibody production is associated with abnormalities of a gland in the chest called the thymus, which is part of the immune system.

Myasthenia gravis is a long-term debilitating disease that may be life-threatening when the muscles involved in breathing are affected.

What is the estimated number of patients affected by the condition?

At the time of designation, myasthenia gravis affected less than 2 in 10,000 people in the European Union (EU)*. This is equivalent to a total of fewer than 101,000 people, and is below the threshold for orphan designation, which is 5 people in 10,000. This is based on the information provided by the sponsor and knowledge of the Committee for Orphan Medicinal Products (COMP).

What treatments are available?

At the time of designation, three medicines that reduce the breakdown of acetylcholine were authorised in the EU for the treatment of myasthenia gravis. Surgery to remove the thymus gland (thymectomy) was performed in some patients. Medicines that reduce the activity of the immune system, such as corticosteroids, were used in patients with disabling weakness, especially those who could not be treated or failed to respond to thymectomy. In patients with severe weakness causing breathing or swallowing problems, plasma exchange was used to remove the abnormal antibodies from the blood.

*Disclaimer: For the purpose of the designation, the number of patients affected by the condition is estimated and assessed on the basis of data from the European Union (EU 27), Norway, Iceland and Liechtenstein. This represents a population of 504,800,000 (Eurostat 2009).

The sponsor has provided sufficient information to show that the medicine containing peptides mimicking antigen receptors on autoimmune B cells and autoimmune T cells associated with myasthenia gravis might be of significant benefit for patients with myasthenia gravis because early studies in experimental models indicate that it might improve the treatment of patients with this condition. This assumption will need to be confirmed at the time of marketing authorisation, in order to maintain the orphan status.

How is this medicine expected to work?

The medicine containing peptides mimicking antigen receptors on autoimmune B cells and autoimmune T cells associated with myasthenia gravis works as a vaccine. It contains peptides (protein fragments) that are designed to activate the patient's immune system so that it attacks and blocks the activity of the abnormal antibodies that damage acetylcholine receptors. By helping to reduce the damage to these receptors, this medicine is expected to improve muscle contraction and relieve the symptoms of patients with myasthenia gravis.

What is the stage of development of this medicine?

The effects of the medicine containing peptides mimicking antigen receptors on autoimmune B cells and autoimmune T cells associated with myasthenia gravis have been evaluated in experimental models.

At the time of submission of the application for orphan designation, no clinical trials in patients with myasthenia gravis had been started.

At the time of submission, this medicine was not authorised anywhere in the EU for myasthenia gravis or designated as orphan medicinal product elsewhere for this condition.

In accordance with Regulation (EC) No 141/2000 of 16 December 1999, the COMP adopted a positive opinion on 2 September 2009 recommending the granting of this designation.

Opinions on orphan medicinal product designations are based on the following three criteria:

- the seriousness of the condition;
- the existence of alternative methods of diagnosis, prevention or treatment;
- either the rarity of the condition (affecting not more than 5 in 10,000 people in the Community) or insufficient returns on investment.

Designated orphan medicinal products are products that are still under investigation and are considered for orphan designation on the basis of potential activity. An orphan designation is not a marketing authorisation. As a consequence, demonstration of quality, safety and efficacy is necessary before a product can be granted a marketing authorisation.

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**Translations of the active ingredient and indication in all official EU languages,
Norwegian and Icelandic**

Language	Active ingredient	Indication
English	Peptides mimicking antigen receptors on autoimmune B cells and autoimmune T cells associated with myasthenia gravis	Treatment of myasthenia gravis
Bulgarian	Пептиди имитиращи рецептори на автоимунни В- и Т-клетки, свързани с миастения гравис	Лечение на миастения гравис
Czech	Peptidy napodobující účinek antigenních receptorů na autoimunitních B a T lymfocytech u myasthenie gravis	Léčba myasthenie gravis
Danish	Antigene receptor-mimetiske peptider mod myasthenia gravis autoimmune B-celler og autoimmune T-celler	Behandling af myasthenia gravis
Dutch	Peptiden die bij myasthenia gravis geassocieerde antigeenreceptoren op auto-immuun B-cellen en auto-immuun T-cellen nabootsen	Behandeling van myasthenia gravis
Estonian	Peptiidid, mis jäljendavad antigeeni retseptoreid Myasthenia Gravisega seotud autoimmuunsete T- ja B-rakkudel	Myasthenia Gravisega ravi
Finnish	Myasthenia gravisin autoimmuunien B- ja T-solujen pinnalla olevia antigeenireseptoreja jäljitteviä peptidejä	Myasthenia gravisin hoito
French	Peptides mimétiques des récepteurs d'antigènes sur les lymphocytes B auto-immuns et les lymphocytes T auto-immuns de la myasthénie	Traitement de la myasthénie
German	Peptide, die Antigenrezeptoren von autoimmunem B- und T-Lymphozyten nachahmen, welche mit Myasthenia Gravis assoziiert sind	Behandlung der Myasthenia Gravis
Greek	Πεπτίδια που μιμούνται αντιγονικούς υποδοχείς επί αυτοάνοσων κυττάρων Β και αυτοάνοσων κυττάρων Τ που συνδέονται με τη βαρεία μυασθένεια	Θεραπεία της βαρείας μυασθένειας
Hungarian	A myasthenia gravisban jelenlévő autoimmun B és T sejteken lévő antigén receptorokat utánozó peptidek	Myasthenia gravis kezelés
Italian	Peptidomimetici del recettore per l'antigene di cellule B e T autoimmuni associate a miastenia grave	Trattamento della miastenia grave
Latvian	Peptīdi, kas imitē antigēnu receptorus uz autoimūnām B šūnām un autoimūnām T šūnām, kas ir raksturīgas myasthenia gravis	Myasthenia gravis ārstēšanai
Lithuanian	Peptidai, imituojantys antigeno receptorius į autoimunines B-ląsteles ir autoimunines T-ląsteles, esant generalizuotai miastenijai	Generalizuotos miastenijos gydymas
Maltese	Peptidi li jimitaw riċetturi ta' antigeni fuq ċelloli B awtoimmuni u ċelloli T awtoimmuni assoċjati ma' myasthenia gravis	Kura ta' myasthenia gravis
Polish	Peptydy naśladujące receptory antygenowe na autoimmunologicznych komórkach B i T w miastonii gravis	Leczenie miastonii gravis

Portuguese	Péptidos que mimetizam os receptores do antígeno nas células B auto-ímmunes e nas células T auto-ímmunes associadas à miastenia gravis	Tratamento da miastenia gravis
Romanian	Peptide mimetice ale receptorilor de antigen pe celulele autoimune B și T asociate miasteniei gravis	Tratamentul miasteniei gravis
Slovak	Peptidy - mimetiká receptorov antigénov na autoimunitných B-bunkách a autoimunitných T-bunkách spojených s myasthenie gravis	Liečba myasthenie gravis
Slovenian	Mimetični peptidi antigenskega receptorja na avtoimunskih celicah B in avtoimunskih celicah T, povezanimi z miastenijo gravis	Zdravljenje miastenije gravis
Norwegian	Antigenreseptor- hermende peptider på autoimmune B-celler og autoimmune T-celler tilknyttet myasthenia gravis	Behandling av myasthenia gravis
Icelandic	Hermendi peptíð mótefnakaviðtaka á sjálfofnæmum B frumum og sjálfofnæmum T frumum í tengslum við vöðvaslensfár	Meðferð við vöðvaslensfári