



EUROPEAN MEDICINES AGENCY
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Public summary of opinion on orphan designation

Cannabidivarin for treatment of fragile X syndrome

On 22 February 2018, orphan designation (EU/3/18/1977) was granted by the European Commission to GW Research Ltd, United Kingdom, for cannabidivarin for the treatment of fragile X syndrome.

What is fragile X syndrome?

Fragile X syndrome is an inherited disease characterised by learning disability. Other symptoms include difficulty communicating and socialising, anxiety, hyperactivity (restlessness), and repetitive and stereotyped behaviours.

The disease is caused by a defect in a gene on the X chromosome. The gene is responsible for the production of a protein called fragile X mental retardation protein (FMRP), which is necessary for the development of the brain. In patients with fragile X syndrome, the defective gene cannot produce normal levels of the FMRP protein and this leads to learning disability and other symptoms relating to the brain or nerves. Women are normally less severely affected than men, because they have a second X chromosome that usually has a normal copy of the gene.

Fragile X syndrome is a long-term debilitating disease because of the severe behavioural problems and learning disabilities it causes.

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

At the time of designation, approximately 2 in 10,000 people in the European Union (EU) are affected by fragile X syndrome. This was equivalent to a total of around 103,000 people*, and is below the ceiling for orphan designation, which is 5 people in 10,000. This is based on the information provided by the sponsor and the knowledge of the Committee for Orphan Medicinal Products (COMP).

What treatments are available?

At the time of designation, no satisfactory methods were authorised in the EU for the treatment of fragile X syndrome. Patients were given general support, such as behavioural therapy and special education, and in some cases, antidepressants, medicines for attention-deficit hyperactivity disorder

*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 28), Norway, Iceland and Liechtenstein. This represents a population of 517,400,000 (Eurostat 2018).



and antipsychotics were used to treat the symptoms of the disease. Genetic counselling (discussion of the risks of passing on the condition to children) was recommended for families with a history of fragile X syndrome.

How is this medicine expected to work?

The way cannabidivarin works is not fully understood. It is thought that it may improve connections and electrical signalling between brain cells. It may also have an effect in dampening down inflammatory responses and reducing toxic oxygen-containing molecules in the brain. These effects are expected to improve symptoms in patients with fragile X syndrome.

What is the stage of development of this medicine?

The effects of the medicine have been evaluated in experimental models.

At the time of submission of the application for orphan designation, no clinical trials with cannabidivarin in patients with fragile X syndrome had been started.

At the time of submission, cannabidivarin was not authorised anywhere in the EU for fragile X syndrome. Orphan designation had been granted for fragile X syndrome in the United States.

In accordance with Regulation (EC) No 141/2000 of 16 December 1999, the COMP adopted a positive opinion on 18 January 2018 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 EU) 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.

For more information

Sponsor's contact details:

Contact details of the current sponsor for this orphan designation can be found on EMA website, on the medicine's [rare disease designations page](#).

For contact details of patients' organisations whose activities are targeted at rare diseases see:

- [Orphanet](#), a database containing information on rare diseases, which includes a directory of patients' organisations registered in Europe;
- [European Organisation for Rare Diseases \(EURORDIS\)](#), a non-governmental alliance of patient organisations and individuals active in the field of rare diseases.

Translations of the active ingredient and indication in all official EU languages¹, Norwegian and Icelandic

Language	Active ingredient	Indication
English	Cannabidivarin	Treatment of fragile X syndrome
Bulgarian	Канабидиварин	Лечение на синдрома на чупливата X хромозома
Croatian	Kanabidivarin	Liječenje sindroma fragilnog X kromosoma
Czech	Kanabidivarin	Léčba syndromu fragilního X
Danish	Cannabidivarin	Behandling af fragilt X-syndrom
Dutch	Cannabidivarine	Behandeling van het fragiele-X-syndroom
Estonian	Kannabidivariin	Fragiilse X sündroomi ravi
Finnish	Kannabidivarioli	Särö-X-oireyhtymän hoito
French	Cannabidivarine	Traitement du syndrome de l'X fragile
German	Cannabidivarin	Zur Behandlung des Fragilen-X-Syndroms
Greek	Κανναβιδιβαρίνη	Θεραπεία του συνδρόμου εύθραυστο X
Hungarian	Kannabidivarin	A fragilis X-szindróma kezelésére
Italian	Cannabidivarina	Trattamento della sindrome dell'X fragile
Latvian	Kanabidivarīns	Trauslā X sindroma ārstēšanai
Lithuanian	Kanabidivarinąs	Lūžiosios X chromosomos sindromo gydymas
Maltese	Cannabidivarin	Kura tas-sindrome ta' X fragli
Polish	Kanabidivaryna	Leczenie zespołu łamliwego chromosomu X
Portuguese	Canabidivarina	Tratamento da síndrome do X frágil
Romanian	Canabidivarină	Tratamentul sindromului cromozomului X fragil
Slovak	Kanabidivarin	Liečba syndrómu fragilného chromozómu X
Slovenian	Kanabidivarin	Zdravljenje sindroma fragilnega kromosoma X
Spanish	Cannabidivarina	Tratamiento del síndrome de X frágil
Swedish	Cannabidivarin	Behandling av Fragil X-syndrom
Norwegian	Kannabidivarin	Behandling av Fragilt X-syndrom
Icelandic	Kannabidívarín	Meðferð við heilkenni brotgjarns X (fragile X syndrome)

¹ At the time of designation