



Cardiology

Innovation in the treatment of cardiovascular diseases

Pulmonary hypertension: sGC stimulator (Riociguat)

Demand:

Pulmonary hypertension (PH) is a rare chronic disease that can be life threatening if left untreated. It is often diagnosed relatively late as it is difficult to identify and causes nonspecific symptoms in the early stages of the disease. Increasing blood pressure in the vessels of the lung combined with diminished oxygen uptake in the blood is often identified in people with PH. This causes less physical capacity and circulatory disturbances resulting in breathlessness even when lying down. If left untreated, the heart will eventually fail. PH patients experience difficulties walking long distances and have a diminished quality of life. Until recently, treatment options for PH have been relatively limited. One of the established therapy options for PH is the prostacyclin-analog Iloprost developed by Bayer Schering Pharma (BSP).

Solution:

The aim of the research activities was to explore the potential of stimulators of guanylate cyclase in different cardiovascular diseases. Guanylate cyclase is an enzyme, which is involved in the nitric oxide (NO) signal transduction pathway. Riociguat, a soluble guanylate cyclase (sGC) stimulator developed for patients suffering from chronic thromboembolic pulmonary hypertension (CTEPH) and pulmonary arterial hypertension (PAH), is a promising treatment option. This new compound has the potential to become a new treatment option for people with PH. The oral agent stimulates the sGC directly and independently from nitrogen oxide (NO), enhancing the formation of cyclic guanosine monophosphate (cGMP). A second messenger, which expands blood vessels, acts as an antihypertensive and conveys tissue protecting effects. Additionally, riociguat enables the sGC to react more sensitively to the effect of the body's own NO. Up until now there have been no therapies available with this innovative mode of action.

Implementation:

To date, clinical studies indicate a strong safety profile for this sGC stimulator – recently concluded Phase II studies showed encouraging results. In the study, 75 patients suffering from chronic thromboembolic hypertension (CETPH) or PAH used riociguat three times a day for a duration of 12 weeks. The drug was well tolerated and showed a high safety profile. Phase III trials of riociguat are likely to be initiated at the end of 2008. Furthermore, the potential of riociguat is also being investigated to treat other forms of PH in Phase II studies.

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