Safety Profile of *Janus Associated Kinase Inhibitors*

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VIE15-0071 DI-012

Background

Janus Associated Kinases family, JAK 1, JAK 2, JAK 3 and Tyk2 are molecular targets for enzyme inhibition that represents a useful strategy for the treatment of different clinical conditions like arthritis, psoriasis, organ rejection and multiple cancer types. However, JAK inhibitors are associated to major adverse drug reactions (ADR), which underlines the importance of close monitoring by healthcare professionals.

Purpose

The aim of this study is to review all JAK inhibitors that are available in national and international pharmaceuticals markets, their therapeutic indications, their underlying mechanism of action and ADR, in order to improve pharmaceutical counseling.

Material and Methods

Literature review of Summary of Product Characteristics of JAK inhibitors available in the pharmaceutical market and literature sources from the PubMed through intersecting the terms «JAK inhibitors», «Janus Associated Kinases inhibitors» and «Janus Kinases inhibitors». Drug databases of the European Medicines Agency (EMA) and United States Food and Drug Administration (FDA) were also consulted to search for JAK inhibitors authorized in clinical practice.

Conclusions

JAK inhibitors currently available in the pharmaceutical market have proven benefits in the treatment of oncologic and autoimmune diseases, but have significant ADR. Knowledge of these undesirable effects is an important factor for pharmacists to give proper information and advice to the health professionals and patients regarding the correct and safe use of these drugs. On the other hand it is important that healthcare professionals be alert for the pharmacodynamics profile of these new drugs and report any suspected adverse reactions. Hospital pharmacists also have an important role in this task being active in the ADR notification process.

Competing interests None.

Results

Currently, only two JAK inhibitors are available in the pharmaceutical market, listed below.

Table 1: JAK inhibitors available in the pharmaceutical market.

Name	Jakavi ▼	Xeljanz*
Active Substance	Ruxolitinib	Tofacitinib
Mechanism of action	Selective inhibitor of the JAK1 and JAK2	Nonselective JAK inhibitor
Therapeutic indications	Myelofibrosis Polycythaemia vera	Rheumatoid arthritis
Authorized by	INFARMED** EMA FDA	FDA

▼ This medicinal product is subject to additional monitoring.

* Tofacitinib has been refused by EMA due to severe ADR and now is only authorized by FDA with major warnings.

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Besides the major hematological and immune adverse effects related to both drugs, interactions with other drugs may occur. Consequently, a close analytical and clinical monitoring would be required for better and correct use of these drugs.