BIOACTIVE ANALOG OF PROSTAGLANDIN F2α - ALFAPROSTOL A LABORATORY APPROACH TO KEY INTERMEDIATES

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Alfaprostol is more potent luteolytic agent than naturally occurring prostaglandin $F_{2\alpha}$. It is synthetic analog which is injectably for scheduling of estrus in mares for purposes of planned breeding. It is also used for treating of postweaning anestrus in economically important farm animals. Due to the presence of triple bond in omega chain, there is necessary atypical synthetic approach for several intermediates in comparison with classical prostaglandins.

We designed classical process approach for industrial production according to general knowledge. During this period, we also investigated and suggested implementation of modern synthetic approach to obtain key intermediates of this interesting molecule. 1,2

Despite considerable efforts, we have not been able to develop conditions that meet the production requirements with regard to the reaction yield, the stereoselectivity of the reaction and the possibilities of working up the reaction mixture in industrial context. The use of highly reactive reagents or catalysts containing heavy metals is another limiting factor. On the other hand, our laboratory methodology makes it possible to obtain the necessary intermediates for further experiments. By-products of these reactions are potential impurities that play an important role in monitoring and validation of the production process

[1]Das, S.; Chandrasekhar, S.; Yadav, J., S.; Grée, R., Recent Developments in the Synthesis of Prostaglandins and Analogues. Chem. Rev., 2007, 107, 3286-3337.

[2]e.g.: Coulthar, G.; Erb, W.; Aggarwal, V.K., Stereocontrolled organocatalytic synthesis of prostaglandin PGF2a in seven steps. Nature, 2012, 489, 278-281.

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