

THE THEORETICAL DESCRIPTION FOR VO(OH)-ASSISTED RISPERIDONE ELECTROCHEMICAL DETERMINATION

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Risperidone (Fig.1) is an atypical antipsychotic drug, developed by Johnson&Johnson. It is used for treatment of bipolar syndrome, depressive psychosis, obsessive-compulsive syndrome and even schizophrenia. It is popularly known as mentioned in House M.D. series.

Being the dopamine antagonist, its side effects include movement disorder, dizziness, malign neuroleptic syndroms, weight gain and ament of the suicide risks, reason why the determination of risperidone concentration is really actual, and the electrochemical methods may be efficient method for it.

Taking into account the risperidone chemical structure, it may be shown that the cathodic route is more viable for its determination. Its behavior is very similar to that of trivalent cobalt analog (both are semiconductors), but much more likely reducing. In order to enhance its sensitivity and stability, it is prefer to deposit it over an organic matrix, as chalcone-based or chalcone-doped conducting polymer. It may be either a stabilizer of the inorganic phase or an electronic transfer mediator.

So, the goal of this work is the mechanistic theoretic analysis of the risperidone electrochemical determination, over a VO(OH)-modified electrode.

In this case, the electroanalytical process will be carried out as on Fig. 2.

The analysis of the correspondent trivariant mathematical model confirms the efficiency of the VO(OH) and VO(OH)-based conducting polymer composites in the risperidone determination. The linear dependence between current and concentration is observed in the wide range of parameter values. On the other hand, the oscillatory behavior is only possible due to the DEL influences of the electrochemical stage.

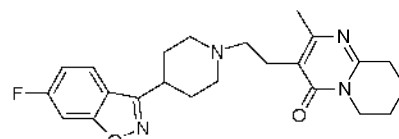


Fig. 1. Risperidone

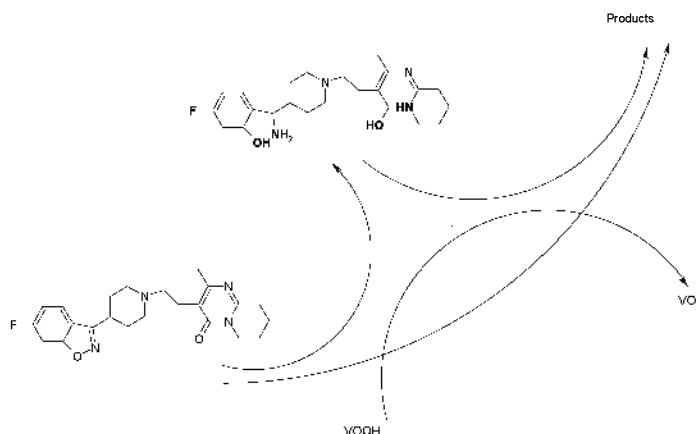


Fig. 2. Risperidone electrochemical determination scheme