Electrochemical generation of electrophilic n.c.a. $^{18}$F-fluorinating reagents impossible?

C. Drerup, F. Kügler, J. Ermert, K. Hamacher, H. H. Coenen

Institut für Neurowissenschaften und Medizin, INM-5: Nuklearchemie, Forschungszentrum Jülich GmbH, Germany

Introduction

Fluorine-18 is the most widely used radionuclide in positron emission tomography (PET) due to its extraordinary decay properties [1]. Currently the radioorganic syntheses of no-carrier-added (n.c.a.) $^{18}$F-labeled products are practically limited to nuclophilic procedures. This complications or excludes n.c.a. syntheses of many putative radiotracers for PET and demands for n.c.a. electrophilic $^{18}$F-labeling.

The unanswered question whether an electrochemical oxidation of n.c.a. $^{18}$F-fluoride can lead to an electrophilic $^{18}$F-fluorine analogue is therefore of major interest. Since in organic fluorochemistry N-F compounds are known as highly effective and selective electrophilic fluorinating agents [2], they were chosen to be synthesized with n.c.a. $^{18}$F-fluoride.

Cyclic Voltammetry

As the basis for assessing the electrochemical properties of BMPTfN was analyzed by cyclic voltammetry (CV). This allows to investigate the oxidation behavior of BMPTfN and enables to evaluate an electro synthesis procedure.

Cyclic voltammograms of BMPTfN showed two succeeding oxidation steps. The first step may lead to a resonance-stabilized radical before further oxidation causes the generation of an unstable cation and finally the decomposition of the compound.

Electrochemical generation of electrophilic n.c.a. $^{18}$F-fluorinating reagents impossible?

Cyclic voltammetry

As the basis for assessing the electrochemical properties of BMPTfN was analyzed by cyclic voltammetry (CV). This allows to investigate the oxidation behavior of BMPTfN and enables to evaluate an electro synthesis procedure.

Cyclic voltammograms of BMPTfN showed two succeeding oxidation steps. The first step may lead to a resonance-stabilized radical before further oxidation causes the generation of an unstable cation and finally the decomposition of the compound.

Electrochemical generation of electrophilic n.c.a. $^{18}$F-fluorinating reagents impossible?

Cyclic voltammetry

As the basis for assessing the electrochemical properties of BMPTfN was analyzed by cyclic voltammetry (CV). This allows to investigate the oxidation behavior of BMPTfN and enables to evaluate an electro synthesis procedure.

Cyclic voltammograms of BMPTfN showed two succeeding oxidation steps. The first step may lead to a resonance-stabilized radical before further oxidation causes the generation of an unstable cation and finally the decomposition of the compound.

Electrochemical generation of electrophilic n.c.a. $^{18}$F-fluorinating reagents impossible?

Cyclic voltammetry

As the basis for assessing the electrochemical properties of BMPTfN was analyzed by cyclic voltammetry (CV). This allows to investigate the oxidation behavior of BMPTfN and enables to evaluate an electro synthesis procedure.

Cyclic voltammograms of BMPTfN showed two succeeding oxidation steps. The first step may lead to a resonance-stabilized radical before further oxidation causes the generation of an unstable cation and finally the decomposition of the compound.

Electrochemical generation of electrophilic n.c.a. $^{18}$F-fluorinating reagents impossible?

Cyclic voltammetry

As the basis for assessing the electrochemical properties of BMPTfN was analyzed by cyclic voltammetry (CV). This allows to investigate the oxidation behavior of BMPTfN and enables to evaluate an electro synthesis procedure.

Cyclic voltammograms of BMPTfN showed two succeeding oxidation steps. The first step may lead to a resonance-stabilized radical before further oxidation causes the generation of an unstable cation and finally the decomposition of the compound.

Electrochemical generation of electrophilic n.c.a. $^{18}$F-fluorinating reagents impossible?

Cyclic voltammetry

As the basis for assessing the electrochemical properties of BMPTfN was analyzed by cyclic voltammetry (CV). This allows to investigate the oxidation behavior of BMPTfN and enables to evaluate an electro synthesis procedure.

Cyclic voltammograms of BMPTfN showed two succeeding oxidation steps. The first step may lead to a resonance-stabilized radical before further oxidation causes the generation of an unstable cation and finally the decomposition of the compound.

Electrochemical generation of electrophilic n.c.a. $^{18}$F-fluorinating reagents impossible?

Cyclic voltammetry

As the basis for assessing the electrochemical properties of BMPTfN was analyzed by cyclic voltammetry (CV). This allows to investigate the oxidation behavior of BMPTfN and enables to evaluate an electro synthesis procedure.

Cyclic voltammograms of BMPTfN showed two succeeding oxidation steps. The first step may lead to a resonance-stabilized radical before further oxidation causes the generation of an unstable cation and finally the decomposition of the compound.

Electrochemical generation of electrophilic n.c.a. $^{18}$F-fluorinating reagents impossible?

Cyclic voltammetry

As the basis for assessing the electrochemical properties of BMPTfN was analyzed by cyclic voltammetry (CV). This allows to investigate the oxidation behavior of BMPTfN and enables to evaluate an electro synthesis procedure.

Cyclic voltammograms of BMPTfN showed two succeeding oxidation steps. The first step may lead to a resonance-stabilized radical before further oxidation causes the generation of an unstable cation and finally the decomposition of the compound.

Electrochemical generation of electrophilic n.c.a. $^{18}$F-fluorinating reagents impossible?

Cyclic voltammetry

As the basis for assessing the electrochemical properties of BMPTfN was analyzed by cyclic voltammetry (CV). This allows to investigate the oxidation behavior of BMPTfN and enables to evaluate an electro synthesis procedure.

Cyclic voltammograms of BMPTfN showed two succeeding oxidation steps. The first step may lead to a resonance-stabilized radical before further oxidation causes the generation of an unstable cation and finally the decomposition of the compound.

Electrochemical generation of electrophilic n.c.a. $^{18}$F-fluorinating reagents impossible?

Cyclic voltammetry

As the basis for assessing the electrochemical properties of BMPTfN was analyzed by cyclic voltammetry (CV). This allows to investigate the oxidation behavior of BMPTfN and enables to evaluate an electro synthesis procedure.

Cyclic voltammograms of BMPTfN showed two succeeding oxidation steps. The first step may lead to a resonance-stabilized radical before further oxidation causes the generation of an unstable cation and finally the decomposition of the compound.

Electrochemical generation of electrophilic n.c.a. $^{18}$F-fluorinating reagents impossible?

Cyclic voltammetry

As the basis for assessing the electrochemical properties of BMPTfN was analyzed by cyclic voltammetry (CV). This allows to investigate the oxidation behavior of BMPTfN and enables to evaluate an electro synthesis procedure.

Cyclic voltammograms of BMPTfN showed two succeeding oxidation steps. The first step may lead to a resonance-stabilized radical before further oxidation causes the generation of an unstable cation and finally the decomposition of the compound.

Electrochemical generation of electrophilic n.c.a. $^{18}$F-fluorinating reagents impossible?

Cyclic voltammetry

As the basis for assessing the electrochemical properties of BMPTfN was analyzed by cyclic voltammetry (CV). This allows to investigate the oxidation behavior of BMPTfN and enables to evaluate an electro synthesis procedure.

Cyclic voltammograms of BMPTfN showed two succeeding oxidation steps. The first step may lead to a resonance-stabilized radical before further oxidation causes the generation of an unstable cation and finally the decomposition of the compound.

Electrochemical generation of electrophilic n.c.a. $^{18}$F-fluorinating reagents impossible?