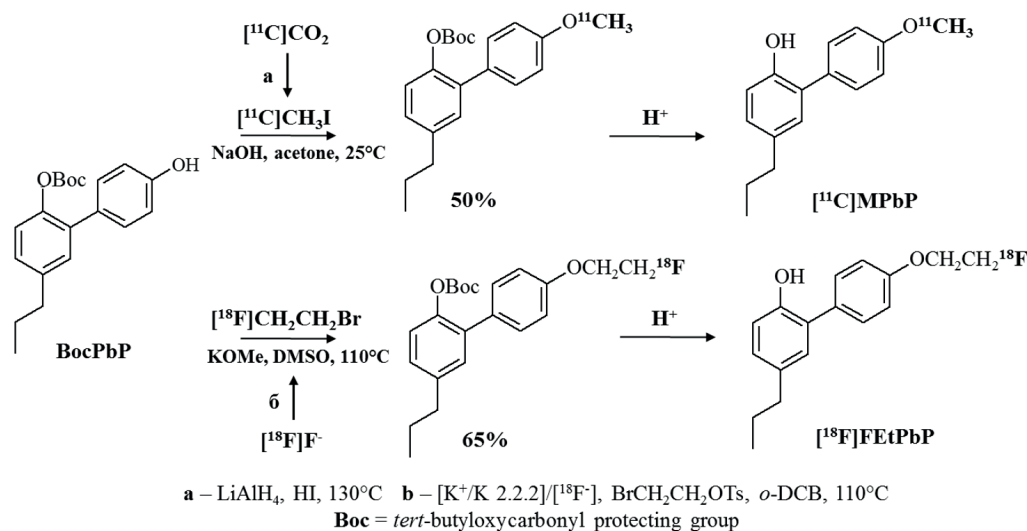


SYNTHESIS OF 4'-O-METHYLHONOKIOL ANALOGUES LABELED  
BY CARBON-11 AND FLUORINE-18 FOR VISUALIZATION OF  
NEUROINFLAMMATION

Vaulina D.D., Kuznetsova O.F., Gomzina N.A.

N.P. Bechtereva Institute of Human Brain RAS, 197376, Saint-Petersburg, ac. Pavlov street, 9  
e-mail: uplavice@gmail.com

In the past decade, neuroinflammatory processes due to their proven role in the pathogenesis of neurodegenerative diseases (Alzheimer's disease, Parkinson's disease, epilepsy, etc.) have been the subject of numerous PET studies. However, none of the proposed radiotracers for the visualization of neuroinflammatory biomarkers does not fully possess the characteristics required for PET, therefore the search for new candidates is highly important. It is known that 4'-O-methylhonokiol (MH), lignan from *Magnolia officinalis* has neuroprotective and anti-inflammatory properties. But so far no radiotracers have been developed based on it. The purpose of this work is to synthesize new labeled compounds based on the MH structure, potential PET radiotracers, and to evaluate their biological activity on a neuroinflammatory model in rats. In the course of work, it was proposed to introduce the carbon-11 radionuclide ( $^{11}\text{C}$ ,  $T_{1/2} = 20.4$  min) and fluorine-18 ( $^{18}\text{F}$ ,  $T_{1/2} = 109.8$  min) into the alkoxy group MH (see scheme).



**Results**  $[^{11}\text{C}]\text{MPbP}$  and  $[^{18}\text{F}]\text{FEtPbP}$  were obtained with a radiochemical purity  $>99\%$  and a chemical impurity content  $<1$   $\mu\text{g}/\text{ml}$ , with a radiochemical yield of 20 and 35% from the activity of radioalkylating agents (decay-corrected). The biodistribution data showed an increased accumulation in the brain of rats with neuroinflammation (4 times) and rats with prior administration of celecoxib (2 times) compared to intact animals. The proposed compounds can be used as radioligands for PET imaging of neuroinflammation.

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