DEVELOPMENT AND VALIDATION OF A METHOD FOR THE LC DETERMINATION *p*-[^{18}F]MPPF IN PLASMA USING A MISPE

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Within the family of serotonin (5-HT) receptors, the 5-HT$_{1A}$ subtype is particularly interesting as it may be involved in various physiological processes or psychological disorders. The *p*-[^{18}F]MPPF, a highly selective 5-HT$_{1A}$ antagonist, is used for *in vivo* studies in human or animal by means of positron emission tomography[1].

In order to selectively extract *p*-[^{18}F]MPPF from plasma, molecularly imprinted polymer (MIPs) was prepared against analyte by using the *p*-MPPF as template. For the control of the selectivity, a non imprinted polymer (NIP) was also synthesized without template. This sorbent, packed in disposable extraction cartridges (DECs), was then evaluated as molecularly imprinted solid phase extraction (MISPE) by means of a sample processor (ASPEC system) prior to the LC determination. The separation was performed on octadecyl silica stationary phase with a mixture of 50 mM acetate buffer (pH 5), methanol and acetonitrile (50:25:25;v/v/v) as mobile phase. The compound of interest was photometrically monitored at 240 nm.

The conditions of extraction were evaluated in order to obtain the highest selective retention and try to explain the retention mechanisms of *p*-[^{18}F]MPPF on this MIP. The direct application of real samples, like aqueous solutions or biofluids, onto DECs filled with MIP leads to a non-selective adsorption of the analyte. The MIP selectivity was exploited in the loading and washing steps by adjusting the pH of samples at a suitable value and by selecting washing liquids to transform non-specific interactions into more specific interactions. Other important parameters involved in the conditioning and elution steps were also studied. In the final selected conditions, more than 90% of recovery and 80% of selectivity were obtained.

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