**Investigation of a Truncated Aptamer for Ofloxacin Detection**

**Gaëlle Catanante1, Sondes Ben Aissa1,2, Georges Istamboulie1, Thierry Noguer1**

*1 BAE-LBBM Laboratory, Université de Perpignan Via Domitia, 52 Paul Alduy Avenue, 66860, Perpignan, France*

*2Sensors and Biosensors Group, Laboratoire de Chimie Analytique et Electrochimie (LR99ES15), Faculté des Sciences de Tunis, Universitaire de Tunis El Manar, Tunis 2092, Tunisia*

**gaelle.catanante@univ-perp.fr**

The revolutionizing medicinal properties of antibiotics as Fluoroquinolones (FQs) have increased their overuse, mainly in veterinary medicine for promoting animal growth and optimizing large-scale breeding programs. Among FQs, ofloxacin is primarily used in treating infections of the respiratory, digestive, and urinary systems in both humans and animals. Despite the remarkable features of this quinolone, its contribution to the expansion of bacterial resistance remains inevitable. The consumption of animal-derived foodstuffs with high residual ofloxacin concentrations can cause adverse reactions in the human body. Therefore, it is crucial to control the fluoroquinolones residues level in animal-derived foodstuffs before consumption. So, we suggest the development of a rapid apatamer based bioassay for ofloxacin detection. Our approach harnesses the fluorescence quenching of the fluorescein-tagged aptamer (FAM-APT) induced by its partial hybridization to a tetramethyl rhodamine-labelled complementary ssDNA (TAMRA-cDNA). In such structure, dye labels brought into proximity act as a FRET pair. Upon ofloxacin addition, an affinity competition occurs to form a more stable FAM-APT/OFL complex, thus unquenching the FAM-APT signal. The recovered fluorescence intensity correlate with the antibiotic’s concentrations at 0.2 – 200 µM in HEPES buffer, with a linear response ranged between 0.2 – 20 µM. The rapid apta-assay achieved limits of detection and quantification of 0.12 and 0.40 µM, respectively. The truncated aptamer shown an improved specificity toward OFL than other quinolones, compared to the original full-length aptamer described in previous works. Finally, the practical application was confirmed to detect OFL quinolone in spiked milk samples with satisfactory recoveries ranging between 97.4% and 111.4%.

**Keywords**: aptamers, antibiotics, bioassay