REA_07 - Selecting Aptamers for Hantaviruses Diagnostic

Valdez, E.C.N1*.
1UERJ - Universidade Estadual do Rio de Janeiro.

Introduction: The occurrence of hantaviruses is increasing in Brazil, mainly causing a Cardiopulmonary Syndrome by Hantavirus (WHO, 2019). The disease treatment and collection of epidemiological data about virus dissemination require a diagnostic method. Results have shown significant Stern-Volmer constants differences which could elect a possible gold star one to the best performance in POC test.

Objective: This work proposed select aptamers against hantavirus Andes protein (ANDES) and then used fluorometric method to choose candidates for diagnostic agents among them.

Methodology:
SELEX

Fluorescence Quenching Experiments
The decay of a fluorescence intensity gave us a method based on the suppression of a fluorophore energy when attached to a quencher agent, what was developed by Lackovicz and collaborators based on the Stern-Volmer Theory. The fluorescence quenching determination used 2 μM solution of ANDES and HSA protein in phosphate buffer, titrated with increasing volumes of 1 μM of two aptamers, named C07 and C0203. Final concentrations were 0, 1, 2, 3, 4, 5, 6, 7, 9 and 11μM. Experiments were performed at 25 and 37°C and the fluorescence spectra were recorded in the range of 300-400 nm, excited at 290 nm wavelength. Both emission and excitation slits width were set at 5 nm. Fluorescence measurements were recorded on Agilent Co Cary Eclipse Fluorimeter and optical spectroscopy were performed in a UV-visible Shimatzu-160A. Data were analyzed using Microcal Origin 6 software applying equations proposed by Cortez et al, 2002.

Results: Comparing the Stern-Volmer constants, a linear relationship at low concentrations between the ANDES and HSA proteins against aptamers has been observed. The Stern-Volmer constants demonstrated a significant difference between the molecular affinity of these proteins with aptamers C07 and C0203, highlighting the greater affinity of aptamers with the hantavirus protein.

Conclusion: Aptamers C07 and C0203 prove to be promising reaction agents in detection mechanisms.

Keywords: Hantavirus; Aptamers; Fluorometric