



Figure 1: *Schema of the Mon4strat analytical method to monitor serum levels of  $\beta$ -lactam*  
 E: M4S-biosensor,  $S_R$ : reporter substrate,  $P_R$ : product of the hydrolysed  $S_R$ , A:  $\beta$ -lactam analyte, and  $P_A$ : product of hydrolysed A.

**Kinetic equation**

The rate equation describing the kinetic model can be resumed to the following equation :

$$\frac{v_{max}^{S_R}}{v_0^A} - 1 = \alpha \cdot A$$

Where  $v_{max}^{S_R}$ : initial velocity of hydrolysis of  $S_R$  by the biosensor in absence of analyte ;  $v_0^A$ : initial velocity of hydrolysis of  $S_R$  by the biosensor in presence of analyte ;  $\alpha$ : linear coefficient ; A : analyte to monitor.