$$\frac{dX_i}{dt} = a_1 \frac{1}{K_1{}^n + X_a{}^n} + b_1 \frac{X_i{}^n}{K_1{}^n + X_i{}^n} - c_1 X_i$$

$$\frac{dX_a}{dt} = a_2 \frac{1}{K_2{}^n + X_i{}^n} + b_2 \frac{X_a{}^n}{K_1{}^n + X_a{}^n} - c_2 X_a$$