Problema721: Calcula a concentración de ácido metanoico, HCOOH, que está disociado un 1%. Dato $K_a = 1{,}77 \cdot 10^{-4}$.

	$HCOOH + H_2O \leftrightarrows$	$HCOO^-_{(aq)} +$	$H_3O^+_{(aq)}$
[inic.]	C	–	–
[eq.]	C – x	x	x

$$K_a = \frac{[HCOO^-]\cdot[H_3O^+]}{[HCOOH]} = \frac{x^2}{C-x} = 1{,}77\cdot 10^{-4}$$

$$\alpha = \frac{Cant.disociada}{Cant.inicial}\cdot 100 = \frac{x}{C}\cdot 100 = 1\,\%$$

$$x = \frac{1\cdot C}{100} = 0{,}01\,C$$

Substituímos este valor na expresión da constante.

$$\frac{x^2}{C-x} = \frac{(0{,}01C)^2}{C-0{,}01C} = \frac{1\cdot 10^{-4}C^2}{C(1-0{,}01)} = \frac{1\cdot 10^{-4}C}{1-0{,}01} = 1{,}01\cdot 10^{-4}\cdot C = 1{,}77\cdot 10^{-4}$$

$$C = \frac{1{,}77\cdot 10^{-4}}{1{,}01\cdot 10^{-4}} = \underline{1{,}75\,M}$$