

Organic Phase

(a)

HX

$$D \equiv \frac{[\text{HX}]_{\text{oct}}^n}{[\text{HX}]_{\text{aq}}^n + [\text{X}^-]_{\text{aq}}}$$

$P_{\text{N}}$

HX

$\text{X}^{\ominus}$

$K_a^{\text{W}}$

Aqueous Phase

(b)

Organic Phase

HX

$K_a^{\text{O}}$

$\text{X}^{\ominus}$

$$D \equiv \frac{[\text{HX}]_{\text{oct}}^n + [\text{X}^-]_{\text{oct}}}{[\text{HX}]_{\text{aq}}^n + [\text{X}^-]_{\text{aq}}}$$

$P_{\text{N}}$

$P_{\text{I,X}^-}^{\text{O}}$

HX

$\text{X}^{\ominus}$

$K_a^{\text{W}}$

Aqueous Phase