

- 4). Berapa gram ekstraksi hani dari bubuk setelah 5x diekstraksi dengan eter 100 ml.

Jawab:

Diketahui: $KD = C_B / C_A$

$W_A = C_A / V_A$

$W_0 = W_A + W_B$

$W_B = C_B \cdot V_B$

$$W_{A(1)} = W_0 \left(\frac{V_A}{V_A + V_B \cdot KD} \right)$$

$$= 4 \text{ gram} \left(\frac{500 \text{ ml}}{500 \text{ ml} + (100 \text{ ml} \cdot 3)} \right) = 2,5 \text{ gr}$$

$$W_B = 4 \text{ gr} - 2,5 \text{ gr} = 1,55 \text{ gr} \quad (\text{ekstraksi pertama})$$

$$W_{A2} = W_{A(1)} \left(\frac{V_A}{V_A + V_B \cdot KD} \right)$$

$$= 2,5 \text{ gr} \left(\frac{500 \text{ ml}}{500 \text{ ml} + (100 \text{ ml} \cdot 3)} \right) = 1,56 \text{ gr}$$

$$W_B = 4 \text{ gr} - 1,56 \text{ gr} = 2,44 \text{ gr} \quad (\text{ekstraksi kedua})$$

$$W_{A3} = W_{A(2)} \left(\frac{V_A}{V_A + V_B \cdot KD} \right)$$

$$= 1,56 \text{ gr} \left(\frac{500 \text{ ml}}{500 \text{ ml} + (100 \text{ ml} \cdot 3)} \right) = 0,976 \text{ gr}$$

$$W_B = 4 \text{ gr} - 0,976 \text{ gr} = 3,024 \text{ gr}$$

$$W_{A4} = W_{A(3)} \left(\frac{V_A}{V_A + V_B \cdot KD} \right)$$

$$= 0,976 \text{ gr} \left(\frac{500 \text{ ml}}{500 \text{ ml} + (100 \text{ ml} \cdot 3)} \right) = 0,61 \text{ gr}$$

$$W_B = 4 \text{ gr} - 0,61 \text{ gr} = 3,39 \text{ gr}$$

$$W_{A5} = W_{A(4)} \left(\frac{V_A}{V_A + V_B \cdot KD} \right)$$

$$= 0,61 \text{ gr} \left(\frac{500 \text{ ml}}{500 \text{ ml} + (100 \text{ ml} \cdot 3)} \right) = 0,378 \text{ gr}$$

$$W_B = 4 \text{ gr} - 0,378 \text{ gr} = 3,622 \text{ gr}$$

- 5). berdasarkan perhitungan diatas dapat disimpulkan bahwa semakin banyak melakukan ekstraksi berturut-turut maka hasil ekstraksi akan semakin bagus dan mendekati berat awal bubuk ekstraksi.

$$5. \quad W_{A1} = W_0 \left(\frac{V_A}{V_A + V_B \cdot K_D} \right)$$

$$W_{A2} = W_{A1} \left(\frac{V_A}{V_A + V_B \cdot K_D} \right)$$

$$W_A(n) = W_0 \left(\frac{V_A}{V_A + (V_B K_D)} \right)^n$$

$$= 4 \text{ gr} \left(\frac{500 \text{ ml}}{500 \text{ ml} + (100 \text{ ml} \cdot 3)} \right)^5$$

$$= 4 \text{ gr} \left(\frac{3,12 \times 10^{13}}{3,12 \times 10^{13} + 519 \times 10^{14}} \right)^5 = \frac{3,12 \times 10^{13}}{62,12 \times 10^{14}} = 0,43 \text{ gr}$$