- Desferal is a siderophore-based drug that is used in humans to treat iron-overload. One molecule of Desferal (molecular formula: $C_{25}H_{48}O_8N_6$) can bind one Fe^{3+} ion. A patient with an iron-overload disease had an excess of 5.34×10^{-4} M Fe^{3+} in her bloodstream. Assuming the patient had a total blood volume of 4.84 L, what mass of Desferal would be required to complex all of the excess Fe^{3+}? **2**

As one mole of Deferal will complex one mole of Fe^{3+}, the number of moles of Desferal required is:

number of moles = concentration × volume = $(5.34\times10^{-4}) \times 4.84 = 2.58\times10^{-3}$ M

The molar mass of $C_{25}H_{48}O_8N_6$ is:

(25 × 12.01 (C)) + (48 × 1.008 (H)) + (8 × 16.00 (O)) + (6 × 14.01 (N)) = 560.694

Hence, the mass required is:

mass = number of moles × molar mass = $(2.58 \times 10^{-3}) \times (560.694) = 1.45$ g

Answer: **1.45 g**