Equations for flow in a packed capillary

$$\text{Linear velocity} = \frac{P d_p^{\,2} \varepsilon^{\,2}}{180 \eta L (1-\varepsilon)^2}$$

$$\text{Dead time} = \frac{L}{\text{Linear Velocity}}$$

$$\text{Column volume} = L \pi r^2 \varepsilon$$

$$\text{Vol Flow Rate} = (\text{Linear Velocity})(\pi\ r^2)(\varepsilon)$$

$$= \frac{P d_p^{\,2} \varepsilon^{\,2}\ \pi r^2}{180 \eta L (1-\varepsilon)^2} \varepsilon$$

Ok

where P is pressure (dynes/cm^2), d_p is the diameter of the packing particles (cm), ε (epsilon) is interparticle porosity, r is the column radius (cm), η (eta) is viscosity (poise), and L is column length (cm)