Electronic Supplementary Material (ESI) for Lab on a Chip.


**Table S1. Drug loss predicted by using 1D model for various drugs**

| **Compound Name** | **MW** (Da) | **LogK*** | **$D_p$**** (m2/s) | **Loss in PDMS at various flow rates***** (%) | | | $\frac{C^*_{i,sl}}{C_{i,\,sl}}$ **for various separation distance$$** (%) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 1000 (ml/day) | 10 (ml/day) | 0.1 (ml/day) | 0.1 mm | 1 mm | 10 mm |
| Cancer drugs | | | | | | | | | |
| Sunitinib | 398 | 5.2 | 1.4E-14 | 5-25% | >50% | >50% | 4.2 | 0.0 | 0.0 |
| Doxorubicin | 543 | 1.3 | 6.2E-15 | <5% | <5% | 5-25% | 0.2 | 0.0 | 0.0 |
| Vincristine | 824 | 3.4 | 2.1E-15 | <5% | 5-25% | >50% | 0.0 | 0.0 | 0.0 |
| Cisplatin | 298 | -2.2 | 3.0E-14 | <5% | <5% | <5% | 16.2 | 0.0 | 0.0 |
| Fluorouracil | 130 | -0.9 | 2.6E-13 | <5% | <5% | <5% | 63.5 | 0.0 | 0.0 |
| Cardiovascular drugs | | | | | | | | | |
| epinephrine | 183 | -0.8 | 1.1E-13 | <5% | <5% | <5% | 45.9 | 0.0 | 0.0 |
| Flecainide | 414 | 3.8 | 1.3E-14 | <5% | >50% | >50% | 3.2 | 0.0 | 0.0 |
| Isoproterenol | 211 | 0.3 | 7.3E-14 | <5% | <5% | 5-25% | 37.2 | 0.0 | 0.0 |
| Metoprolol | 267 | 1.8 | 3.9E-14 | <5% | <5% | >50% | 22.6 | 0.0 | 0.0 |
| Verapamil | 454 | 5.2 | 9.9E-15 | 5-25% | >50% | >50% | 1.6 | 0.0 | 0.0 |

*Found from (ref [1])

**The Dp (diffusion coefficient of drugs in PDMS) was found by using following scaling relation as used previously [2]. We used paclitaxel diffusion coefficient found in this study for the scaling.

$$D_{p,\,u} = D_{p,\,ptaxel}\left(\frac{MW_u}{MW_{Ptaxel}}\right)^{-2.6}$$

Where, $D_{p,\,ptaxel}$ and $MW_{ptaxel}$ are the diffusion coefficient and molecular weight of paclitaxel; $D_{p,\,u}$ and $MW_{ptaxel}$ is the diffusion coefficient and molecular weight of the drug compound under analysis

***The loss was calculated for various flow rates mentioned for a microfluidic channel of 100µm x 200µm x 100mm (h x w x l) at t = 24 hr using equation 7.

$\frac{C_{i,sl}^{*}}{C_{i,\,sl}}$ was calculated using equation 11 for various separation distances (x) mentioned in the table.

**References**


1. D. S. Wishart, C. Knox, A. C. Guo, S. Shrivastava, M. Hassanali, P. Stothard, Z. Chang and J. Woolsey, *Nucleic Acids Res*, 2006, **34**, D668-672.
2. O. J. Karlsson, J. M. Stubbs, L. E. Karlsson and D. C. Sundberg, *Polymer*, 2001, **42**, 4915-4923.