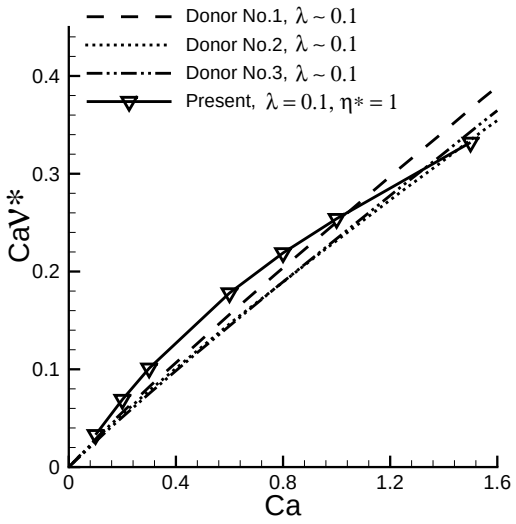

Figure 1: Effect of membrane viscosity on the tank-treading frequencies of red blood cells for viscosity ratio $\lambda = 0.1$. Numerical data are shown for $\eta^* = 1$ using symbols and solid line, and compared with the experimental results of Fischer (2007), which are shown by lines without symbols: (– – –); $(\cdots)$; and $(- \cdot\cdot -)$. We assumed $B' = 10\,(\mu\mathrm{N/m})$ to evaluate Ca from the experimental data.

Supplementary Materials

The implementation of the viscoelastic model can be validated in the case of a red blood cell with a biconcave resting shape since there is relatively less results on the influence of membrane viscosity on capsule dynamics as compared to that on red blood cell dynamics. In Fig. 1 we compare the tank-treading frequency of the red blood cells obtained from our simulations with the experimental data obtained by Fischer (2007). The non-dimensional frequency $\nu^* = 2\pi/\dot{\gamma}T_{tt}$, where T_{tt} is the tank-treading period, agrees quite well with the experimental data.

REFERENCES

Fischer, T. M. 2007 Tank-tread frequency of the red cell membrane: Dependence on the viscosity of the suspending medium. *Biophys. J.* **93**, 2553–2561.