

Abstract

Dengue virus is the most prevalent mosquito-borne *Flavivirus* and is known to cause dengue hemorrhagic fever. Currently, there are no specific anti-dengue treatments or any licensed vaccine available to treat or prevent the disease, bringing dengue incidence to increase up to 30-fold in the past few decades. To stop the increasing incidence, dengue eradication programs have leaned towards vector control using the larvicide temephos. Temephos can be used to eradicate mosquito larvae in household water bodies such as drinking water containers and bathwater containers. While the World Health Organization has claimed that temephos-treated drinking water is safe for consumption, the toxicity of temephos towards human skin from repeated bathwater exposure has not yet been analysed. Therefore, this study aims to investigate the effect of daily temephos-treated bathwater exposure towards immortalized human keratinocytes (HaCaT cells). We monitored how temephos concentration would fluctuate by simulating daily bathwater cycles. We found that the concentration of temephos quickly diminished from the original application of 1 mg/L to almost undetectable after 15 days of temephos application. Furthermore, our toxicity assay results have demonstrated that temephos could not significantly reduce the viability of HaCaT cells and neither could it induce more cell death compared to negative control. However, further expression studies on apoptosis-related-proteins are needed to elucidate the full extent of temephos toxicity at the cellular level.