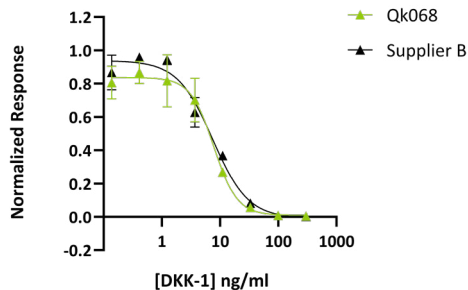
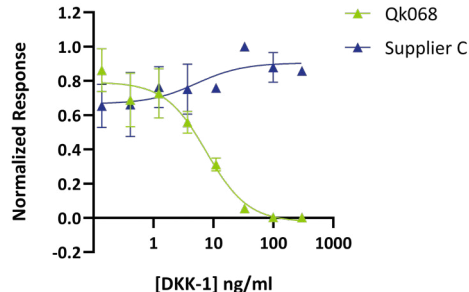


## The only commercially available animal-free bioactive DKK-1 for reproducible stem cell culture and related applications

a.



b.



### Quantitative luciferase reporter assay shows equivalent bioactivity of Qkine AOF DKK-1 (Qk068, green) and mammalian-expressed DKK-1.

HEK293T cells were treated in triplicate with a serial dilution of DKK-1 and a standard concentration of Wnt-3a for 24 hours. Active DKK-1 inhibits Wnt-3a activation of the Wnt-3a pathway. a. Equivalent bioactivity of bacterially-expressed AOF DKK-1 (Qkine, green Qk068) and mammalian-expressed DKK-1 (Supplier B, black, Peprotech 120-30) was observed with an EC50 of 7.8 ng/ml (301 pM) and 7.5 ng/ml (291 pM) respectively. b. No biological activity was determined using bacterially-expressed DKK-1 from an alternative supplier (Supplier C, blue, ProSpec PRO-1566). Please note the supplier does not provide information on the biological activity of this protein.

### Introduction

Dickkopf-related protein 1 (DKK-1) is a potent Wnt pathway antagonist used to control cell fate, self-renewal, and differentiation. Recombinant human DKK-1 is used in stem cell differentiation protocols, particularly in neural and osteogenic pathways, and for mimicking dysregulated Wnt signaling seen in cancers. Qkine has recently developed a fully animal-origin free (AOF) DKK-1 to support translational and sensitive studies. Using high-purity AOF proteins improves reproducibility by eliminating contamination or off-target effects from trace animal components and co-purifying related proteins naturally secreted by mammalian protein expression systems.

### Results

- To determine relative bioactivity of mammalian and bacterially expressed DKK-1, the bioactivity of Qkine AOF DKK-1 (Qk068) was compared directly with mammalian-expressed DKK-1 from a main supplier in a Wnt-3a-responsive firefly luciferase reporter assay. The bioactivity of these proteins was comparable.
- Qkine DKK-1 activity was also compared with a commercially available bacterially expressed DKK-1. This protein showed no inhibition of Wnt activity in the reporter assay, suggesting DKK-1 from the alternative supplier is not biologically active.

### Conclusion

The comparative bioactivity data demonstrate that Qkine DKK-1 (Qk068) has equivalent bioactivity to the mammalian-expressed DKK-1 from an alternative major supplier. Qkine thus provides the first reliable source of high-quality animal-free DKK-1 for highly-defined reproducible culture of stem cells, neuronal cells, osteoblasts and other applications.