

## **Transcripts of *Gracilaria changii* that improve copper tolerance of *Escherichia coli***

### **ABSTRACT**

In this study, we used bacterial functional screening to isolate transcripts from a red seaweed, *Gracilaria changii* Abbott, Zhang et Xia (Xia et Abbott) that improved copper tolerance of *Escherichia coli*. We have identified several seaweed proteins that may be involved in copper efflux, detoxification and ROS scavenging, such as ATPase, outward-rectifying potassium channel (KCO1), vanadium chloroperoxidase and a high affinity phosphate transporter. All transcripts were shown to be able to enhance the copper tolerance of *E. coli* up to 4 mM CuCl<sub>2</sub>. These transcripts may share similar functions in the copper homeostasis of both *E. coli* and *G. changii*. In addition, we discovered a few transcripts with uncharacterized function(s) in copper tolerance in both organisms.

**Keyword:** Copper tolerance; *Escherichia coli*; *Gracilaria changii*; Seaweed