### Supplementary Material

### HPLC protocol

Voltammetric measurements HPLC assay of monoamine neurotransmitters Monoamine transmitters and their metabolites in honeybee brains were assayed by high-performance liquid chromatography (HPLC) electrochemical detection. Dissected brains were homogenised with a High flux tissue-crushing instrument in 200 ul of the ice-cold buffer after the samples were put into a 0.22ul centrifugal filter centrifuged 10000rpm for 1 min and 4℃ temperature immediately before use. An Acclaim C18 column (2.2um, 2.1×150 mm) at 40℃ with the mobile phase, which consists of, and acetonitrile, isolated these constituents. It was prepared by dissolving 45uM NaH2PO4, 1.7mM sodium 1 octane sulfonate, 50μM EDTA, and titrated to pH 3.30 with citric acid. The mobile phase was vacuum-filtered immediately before use through a 0.22 um pore filter to remove particulate matter and degas the solution. Amine was determined at 0.25 mL/min in flow rate; 10 ul supernatant was filtrated with 0.22 um membrane as the loading solution was detected at 350 mV.