Supporting Information

for

**Brain-targeted intranasal delivery of dopamine with borneol and lactoferrin co-modified nanoparticles for treating Parkinson’s disease**

Shengnan Tanga\*, Aiping Wanga\*, Xiuju Yana, Liuxiang Chua, Xiucheng Yanga, Yina Songa, Kaoxiang Suna, Xin Yua, Rongxia Liua, Zimei Wua, Peng Xueb

a School of Pharmacy, Collaborative Innovation Center of Advanced Drug Delivery System and Biotech Drugs in Universities of Shandong, Key Laboratory of Molecular Pharmacology and Drug Evaluation (Yantai University), Ministry of Education, Yantai University, Yantai, Shandong Province, People’s Republic of China

b State Key Laboratory of Long-Acting and Targeting Drug Delivery System, Shandong Luye Pharmaceutical Co., Ltd, Yantai, Shandong Province, People’s Republic of China

\*These authors contributed equally to this work.

Corresponding author:

Aiping Wang

School of Pharmacy, Yantai University, No 30 Qingquan road, Yantai, 264005, Shandong Province, People’s Republic of China

Tel: 86 535 3946458, Email: wangaiping@luye.com



**Figure S1**. Transmission Electron Microscopy (TEM) images of Lf-BNPs (Scare bar 100 nm).



**Figure S2**. Release profile of dopamine in PBS from free dopamine, dopamine-loaded NPs, Lf-NPs, and Lf-BNPs (n=3, mean ± SD).