Abbreviations

5-HT: 5-hydroxytryptamine; 6-OHDA: 6-hydroxy dopamine; AD: Alzheimer's disease; $ADLP^{APT}$: Transgenic AD mice with Aβ plagues, neurofibrillary tangles, reactive gliosis in the brain and gut dysbiosis; ALS: Amyotrophic lateral sclerosis; APP: amyloid precursor protein; ASD: Autism spectrum disorder; Atg5: autophagy-related 5; Aβ: β-amyloid; BBB: brain-blood barrier; BDNF: brain derived neurotrophic factor; BMAA: β-N-methylamino-L-alanine; CCK: cholecystokinin; CD32: Cluster of differentiation 32; CD68: Cluster of differentiation 68; CLDN2: claudin 2; CNS: central nervous system; CRP: C-reactive protein; EECs: enteroendocrine cells; ENS: enteric nervous system; ER: endoplasmic reticulum; FMT: Faecal microbial transplantation; GABA: gamma aminobutyric acid; GBA: Gut-Brain Axis; GF: Germ-free; GI: gastrointestinal; GM: Gut microbiota; GOS: galacto-oligosaccharides; HPA: hypothalamic-pituitary adrenal; IBS: irritable bowel syndrome; IECs: intestinal epithelial cells; IFN-γ: Interferon-γ; IL-1β: Interleukin-1β; IL-6: Interleukin-6; LPS: Lipopolysaccharide; MAMPs: microbe-associated molecular patterns; MS: multiple sclerosis; NDDs: neurodegenerative diseases; NF-kB: Natural factor-kappa B; OS: Oxidative stress; PAMPs: Pathogen-associated molecular patterns; PAP mice: APP/PS1 transgenic mice mimicking AD with severe gut dysbiosis; PD: Parkinson's disease; PRRs: pattern recognition receptors; PS1: presenilin 1; RNS: reactive nitrogen species; ROS: Reactive oxygen species; SCFAs: Short chain fatty acids; SOCS3: Suppressor of cytokine signaling 3; SPF: Specific pathogen free; TLR4: toll-like receptor-4; TNF-α: Tumour necrosis factor-α; WT: wild-type; αSyn: α-Synuclein.