

The present invention relates to the medical field, in particular to the enhancement of brain performances and to the treatment of pathological stress. More specifically the present invention relates to a nanoparticle or nanoparticles' aggregate for use in enhancing brain performances or in prevention or treatment of pathological stress in a subject when the nanoparticle and/or nanoparticles' aggregate is exposed to an electric field, wherein the nanoparticle's or nanoparticles' aggregate's material is selected from a conductor material, a semiconductor material, an insulator material with a dielectric constant ϵ_{ijk} equal to or above 200, and an insulator material with a dielectric constant ϵ_{ijk} equal to or below 100. It further relates to compositions and kits comprising such nanoparticles and/or nanoparticles' aggregates as well as to uses thereof.