NEUROPROTECTIVE EFFECTS OF CURCUMINOIDS IN AN AMYLOID-INFUSED RAT MODEL OF ALZHEIMER’S DISEASE

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Curcuminoid is a mixture of curcumin, bisdemethoxycurcumin and demethoxycurcumin having therapeutic potential in Alzheimer’s disease (AD), where neuronal death takes place through multiple pathways. We aimed to investigate rescuing potential of curcuminoid mixture and its individual components on fas receptor pathway in βamyloid+ibotenic acid-infused rats. Following animals' treatment for five or twenty days, fas receptor and ligand mRNA levels were evaluated through RT-PCR in hippocampal area. After five days, fas receptor level in neurotoxin infused groups was elevated to 403.5±12.92% compared to the control group (100%). Only demethoxycurcumin treatment rescued levels to 233.24±14.91, 189.76±15.01 and 264.74±8.91% at 3, 10 and 30mg/kg respectively. After twenty days, fas receptor level in neurotoxin group was 461.38±15.08% compared to the control group. All of these test compounds at each dose, showed highly significant ($p < 0.01$) decrease in fas receptor levels compared to the neurotoxin group, all showing similar efficacy. Although, fas ligand level did not increase in neurotoxin group compared to the saline control, however, only curcuminoid mixture and demethoxycurcumin decreased level at 10 and 30mg/kg respectively. In this case demethoxycurcumin was more effective compared to the curcuminoid mixture. After longer duration, fas ligand levels in neurotoxin group were again similar like saline control group, however, only curcuminoid mixture showed drastic decrease in level to 19.01±2.03% at 30mg/kg. These data suggest that demethoxycurcumin is the key player in the observed efficacy of the curcuminoid mixture in this model, though other components also participate in the overall therapeutic potential of curcuminoid mixture in AD.