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Effect of polyphenols in the changes in oxidative stress and inflammatory processes observed in brain and in neural cell in culture

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Genistein is a polyphenol component of soya used in oriental countries, as a component of their diary diet. Polyphenols, such as genistein, resveratrol and others, have demonstrated to be effective to promote anti-oxidant and anti-inflammatory mediators. Furthermore, genistein produces NFkB and AP-1 decrease, obtaining control of pro-inflammatory proteins and reducing pro-oxidant proteins. Polyphenols have beneficial effects in stress situations, and in inflammation brain illness. Our data indicate that genistein can trigger signal transduction pathways to elevate cell survival in front of cell death induced by neural-damage. Increase in apoptosis/necrosis is detected, with Caspases, Cytochrome c and Smack/Diablo proteins in neural cells. Phytoestrogens of soya, can unit to estradiol receptor and produce similar actions than female estradiol hormone, with reduction in oxidative stress and inflammation after damage. p53 and bcl-2 genes diminish activation of apoptosis and necrosis pathways. How polyphenol products regulate and control signaling cascades to help cells increasing cell survival, are relevant areas of study, for example: in Alzheimer, Parkinson, neurodegenerative's diseases, as well as in new neural generation. Preventive approach remains to be elucidated, and why polyphenols can act in health Asiatic brain compared with occidental population need more studies in the future. Results from our group and other suggest involvement of neural cells, blocking cellular signal transduction, perhaps triggering induction of apoptosis/necrosis in brain degeneration. In conclusion, polyphenols can regulate neurodegeneration as well as neurogeneration, stopping conversion from normal to affected neural cells.