EFFECTS OF A AGLYCON-RICH FORMS BIOCONVERTED SOYBEAN EXTRACT ON ENDOTHELIN-1, NITRIC OXIDE AND PROSTAGLANDIN E2 PRODUCTION

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Oestrogen replacement therapy is no thought to be a safe treatment for prevention of cardiovascular disease in menopausal women; isoflavones are a possible alternative. The endothelium produces nitric oxide (NO), a vasoprotective and anti-atherosclerotic agent. Oestrogen has beneficial effects on the cardiovascular system by enhancing NO production. Oestrogen-like compounds such as isoflavones are also suggested increase NO production, exerting anti-atherogenic effects. Therefore, a compound that increase NO may be usable as therapeutic agents against the development of atherosclerosis in menopausal women. Isoflavones are present in soy foods mainly as glucosides. Soy isoflavone aglycones, the biological active estrogen-like compounds, are absorbed faster and in higher amounts than their glucoside derivatives. In addition, the aglycone forms have a higher biological activity implying that isoflavone aglycone-rich products may be more effective than the ones rich in glycosides in preventing chronic diseases such as coronary heart disease.

Objective: To evaluate a extract of soybean fermented by Aspergillus awamori (a β-glucosidases-producing filamentous fungi) on which polyphenol glucosides were bioconverted to aglycone forms on production of nitric oxide, prostaglandin E2 and Endothelin-1 in vitro in human endothelial cells (HUVEC), comparing it with a non-fermented extract.

Results: Bioconverted soybean extracts enhanced endothelin-1, nitric oxide and prostaiglandin E2 production, while the unfermented extract enhanced endothelin-1 production but was not able to increase nitric oxide and prostaiglandin E2 production.

Conclusion: Only the aglycone-rich forms soybean extracts was able to increase nitric oxide and prostaiglandin E2 production, demonstrating that in endothelial cells in vitro, may be usable as therapeutic agents against the development of atherosclerosis.