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 early stage of atherosclerosis is characterized by increased levels of inflammatory cytokines, oxidative stress, and the expression of adhesion molecules (CAMs) on vascular endothelium. Therefore, compounds that suppress CAMs or reduce oxidative stress may be usable as therapeutic agents against the development of atherosclerosis in menopausal women. Soy isoflavones exert anti-atherogenic effects. Isoflavones are present in soy foods mainly as glucosides. Soy isoflavone aglycones, the biological active estrogenlike 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 the effects of a extract of soybean fermented by Aspergillus awamori (a ß-glucosidases-producing filamentous fungi) on which polyphenol glucosides were bioconverted to aglycone forms on adhesion molecules expression (VCAM-1, ICAM-1 and E-selectin) and oxidative stress induced by hydrogen peroxide in vitro in human endothelial cells (HUVEC) and compare it with a non-fermented extract.

Results: Bioconverted soybean extract decreased VCAM-1, ICAM-1 and E-selectin on cell surface and on cell culture supernadant, and decreased the oxidative stress induced by hydrogen peroxide.

Conclusion: The aglycone-rich soybean extract was able to reduce adhesion molecules expression and oxidative stress, demonstrating that in endothelial cells in vitro, may be usable as therapeutic agents against the development of atherosclerosis.