

Strawberry (*Fragaria ananassa* Duch.) Alba extract attenuates DNA damage in lymphocytes of patients with Alzheimer's disease

Abstract

Increased levels of oxidative stress and oxidative DNA damage are common features in the pathology of Alzheimer's disease (AD) found in neurons and peripheral cells like peripheral blood lymphocytes (PBL). Natural products such as strawberry cultivar Alba are an important source of bioactive nutrients that could help in lowering both the oxidative stress and DNA damage levels. The objective was to estimate the effects of Alba extract on DNA damage in peripheral blood lymphocytes of sporadic AD (aged 60–84 years) patients, and healthy elderly (aged 69–83 years) and young (aged 21–30 years) individuals in *in vitro* conditions. Comet assay was used as a sensitive technique for the evaluation of PBL DNA damage levels. Reduction of basal DNA damage level in PBL was shown in the young group after the incubation with Alba extract ranging from 25 to 200 µg/ml, with 100 µg/ml being the most effective concentration. Selected Alba extract of 100 µg/ml was further used for PBL treatment of AD and healthy elderly age matched group, displaying potential to significantly attenuate DNA damage levels in both groups ($p < .05$). Alba extract displayed biological activity against oxidative DNA damage, suggesting that its functional ingredients may have beneficial health effects. Practical applications: The data obtained in this preliminary study displayed that strawberry Alba extract is efficient against DNA damage induced by endogenous and exogenous oxidative stress in peripheral blood lymphocytes of Alzheimer's disease *in vitro*. An active area of future research of Alba cultivar should be to determine the trials in *in vivo* systems. Our findings also suggest that Alba cultivar's functional ingredients potentially may have beneficial health effects in AD.