

台灣鄉土蔬菜-紅甘藷葉對運動期之籃球選手其抗氧化力與免疫狀態的調節

The effect of Taiwan indigenous vegetable consumption on the modulation of the antioxidative status and immune system in basket athletes during training period

中文摘要

本研究的目的是探討在控制飲食中 carotenoids 的攝取量下，台灣產鄉土蔬菜中多酚類含量高的紅甘藷葉對接受中高強度訓練的運動選手體內抗氧化狀態及免疫力之調節效應。本研究為 diet-control design，並以 15 位台北醫學大學籃球校隊男女隊員作為受試者，於實驗期間，每位選手每週至少接受 2 次 2-3 小時達到 80% 最大心跳率之運動強度訓練，且全程均維持低多酚類飲食，由台北醫學大學附設醫院營養室提供 2 週以油炒之 100 公克紅甘藷葉取代 1 份蔬菜的午餐及晚餐作為實驗飲食；排空 2 週後再供應 2 週含低多酚類且調整其 carotenoids 含量的紅蘿蔔取代 1 份蔬菜之午餐及晚餐作為對照飲食。分別於調整期、紅甘藷葉飲食期、排空期和對照飲食期後採集受試者空腹血液、清晨唾液及前一天之 24 小時尿液，以進行體內氧化壓力、抗氧化力及免疫力之評估。研究結果顯示，攝食紅甘藷葉二週後，受試者血漿中多酚類的濃度比對照期顯著較高，且尿液中多酚類的濃度也有上升的趨勢。此外，在抗氧化力及氧化壓力評估方面：攝食紅甘藷葉二週後，受試者血中抗氧化物質-維生素 C、E 濃度顯著比對照期為高，而 LDL lag time 有延長的趨勢；並且血漿中脂質過氧化物(MDA+4-HNE)的含量比對照期較低，尿液中 DNA 氧化傷害指標(8-OHdG)的含量也顯著下降。在免疫力方面：攝取紅甘藷葉二週後，受試者唾液中 sIgA 的濃度與對照期相較之下有上升的趨勢；血中淋巴細胞增殖反應和自然殺手細胞毒殺力比對照期皆顯著增加；細胞激素(IL-2、IL-4)的分泌量於二期間並無顯著差異，然而 IFN- γ 的分泌量則比對照期顯著增加。綜合上述，運動選手於接受中高強度的運動訓練期間攝取多酚類含量高的紅甘藷葉後，可改善體內抗氧化狀態，且具有調節體內免疫反應的作用。

英文摘要

The aim of this present study was to evaluate the effect and modulation on the antioxidative status and immune system of the high- and medium-intensity training athletes by consuming purple sweet potato leaves (PSPL). Fifteen elite basketball athletes were enrolled in this study. All subjects ingested the PSPL diet for 2 weeks followed by consuming low polyphenol diet for 2 weeks. Blood and urine samples were taken for biochemical analysis. The results showed that plasma polyphenol level significantly increase in PSPL group. Also, it showed significant increase in plasma

vitamin C and vitamin E concentrations and decrease in 8-OHdG level, however there was no significant increase in LDL lag time and decrease in MDA+4-HNE level after consuming PSPL diet. PSPL consumption produced a significant increase in the lytic activity of NK cells, proliferation responsiveness of peripheral blood mononuclear cells and secretion of IFN- γ , and no significant increase in salivary IgA secretion and secretion of IL-2 and IL-4. In conclusion, consumption PSPL for 2 weeks can modulate antioxidative status and various immune functions in the high- and medium-intensity training athletes.