

Raw brown onion consumption reduces plasma triglycerides and has other health benefits

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Compounds in garlic and onions have been implicated as providing putative health benefits, such as reducing the risk of coronary heart disease and atherosclerosis (1). However, the effects of different onion varieties and level of intake have not been studied. The aim of the present study was to evaluate the potential health benefits of two onion varieties fed at two levels of intake, using the pig as a human model.

Twenty-five female (Large White x Landrace) pigs (initial weight 41.5 ± 4.23 kg) were used in a $2 \times 2+1$ factorial designed experiment. The treatments consisted of a white onion (WO) and brown onion (BO) fed at 10 or 24 g/MJ DE and no onion, respectively. Onion varieties were selected on the basis of the level of cysteine-sulfoxides, WO being low and BO high. The WO and BO varieties were grown in Queensland and Tasmania, respectively. Onions were homogenised in a blender prior to being mixed with dry feed formulated to contain 16.7 MJ DE/kg and 10% (w/w) of tallow to simulate the saturated fatty acid content of a western human diet. Pigs were fed approximately 90-95% of *ad-libitum* (1.67 MJ DE/kg^{0.75}) for 6 weeks. Blood samples were obtained by venipuncture immediately before feeding at weeks 1, 2, 4 and 6 and at three hours post-feeding at weeks 4 and 6. Plasma or serum, were analysed for total cholesterol (TC), HDL-cholesterol, LDL-cholesterol, triglycerides (TG), clotting factors such as prothrombin (PT), activated prothrombin (APPT) and thromboxane B₂ (TXB₂) and cell counts which included the ratio of segmented neutrophils to lymphocytes (N:L).

	TC (mmol/L)	HDL (mmol/L)	LDL (mmol/L)	TG (mmol/L)	Platelets (10 ⁹ /L)	PT (sec)	APTT (sec)	TXB ₂ (ng/mL)	N:L
Control	2.70	1.07	1.80	0.56 ^a	428	13.8	21.5	23.59 ^a	0.81 ^a
WO	2.62	0.94	1.71	0.61 ^b	467	14.0	21.8	29.44 ^b	0.64 ^{ab}
BO	2.46	0.96	1.64	0.44 ^c	392	14.3	23.3	23.01 ^a	0.49 ^b
LSD	0.291	0.123	0.217	0.149	95.34	0.423	1.795	5.612	0.252

Superscript letters a, b and c indicate significance ($P < 0.05$) within column.

BO was more effective than WO onions in lowering blood TC (9%, $P = 0.059$), LDL (10%, $P = 0.13$) and TG concentrations (21%, $P = 0.082$). BO reduced TC in a dose dependent manner (linear relationship $P = 0.028$). Pigs fed BO tended ($P < 0.10$) to have higher PT and APPT times whereas these variables were unaffected in pigs fed WO. Concentrations of TXB₂ were higher in pig's fed WO onion, but were unaffected in pigs consuming BO onions. Serum fibrinogen and platelet counts were similar across all treatments. The N:L, an indicator of stress intensity, was significantly reduced in pigs fed the BO onions. There was significant difference between weeks ($P < 0.05$) and between pre-feeding and post-feeding ($P < 0.05$) for most variables, except for platelet count and cholesterol fractions (data not shown). In conclusion, the consumption of brown onions is effective in lowering plasma lipid levels and increasing clotting time in pigs.

1. Chen JH, Chen HI, Tsai SJ, Jen CJ. Chronic consumption of raw but not boiled Welsh onion juice inhibits rat platelet function. *J Nutr* 2000; 130: 34-37.