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Whole Fat Stirred Coconut Yoghurt Increases Serum IgG level in Adult Wistar Rat Model

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Introduction

Regular consumption of yoghurt particularly in immunocompromised populations, may enhance immune response. The mucosal immune system provides the initial immunological barrier against most pathogens. Immunoglobulin A (IgA), the predominant mucosal antibody is thought to mediate defense functions at different anatomic levels in relation to mucosal epithelium. Consumption of yoghurts containing probiotic bacteria such as *Lactobacillus*, *Bifidobacteria* can result to faster isotype switching concomitantly leading to increased resistance to immune-related diseases. The aim of this experiment was to investigate the immunomodulatory properties of whole and reduced-fat stirred coconut yoghurt in adult male Wistar rat model. The high prevalence of milk protein allergy and lactose intolerance has necessitated consumers to shift their attention to non-dairy alternative

Materials and method

Six weeks old male Wistar rats (*Rattus norvegicus*) n = 20 weighing 200 – 260 g were used for this experiment. Blood was collected from the tail vein of the rats every week for 4 consecutive weeks. The blood samples were centrifuged, and serum was kept at -20°C until it was time for analysis. Enzyme linked immunosorbent assay was used to detect (IgA) and immunoglobulin G (IgG) using mouse antibody. Parameters such as serum albumin, cholesterol, triglyceride, glucose, and total protein were determined. Both RFY and WFY were produced from fermentation of fresh coconut milk, in the case of RFY the oil was removed.

Results

Table 1. Effect of treatments on body weights of rats

Groups	Baseline (initial)	FBW	% Wt gain
NC	258.50 ± 2.38ab	345 ± 23.80ab	33.46
PC	262 ± 2.94ab	363.75 ± 28.10c	38.81
RFY	252.25 ± 6.29a	342.5 ± 22.54a	35.77
WFY	257.50 ± 9.14ab	351.25 ± 17.50b	36.40

Data are expressed as ± SD (n = 5), values in the same row with different superscripts are significantly different at p < 0.05. Negative control (NC), whole fat coconut yoghurt (WFY), reduced fat coconut yoghurt (RFY), final body weight (FBW), percentage weight gain (% wt).

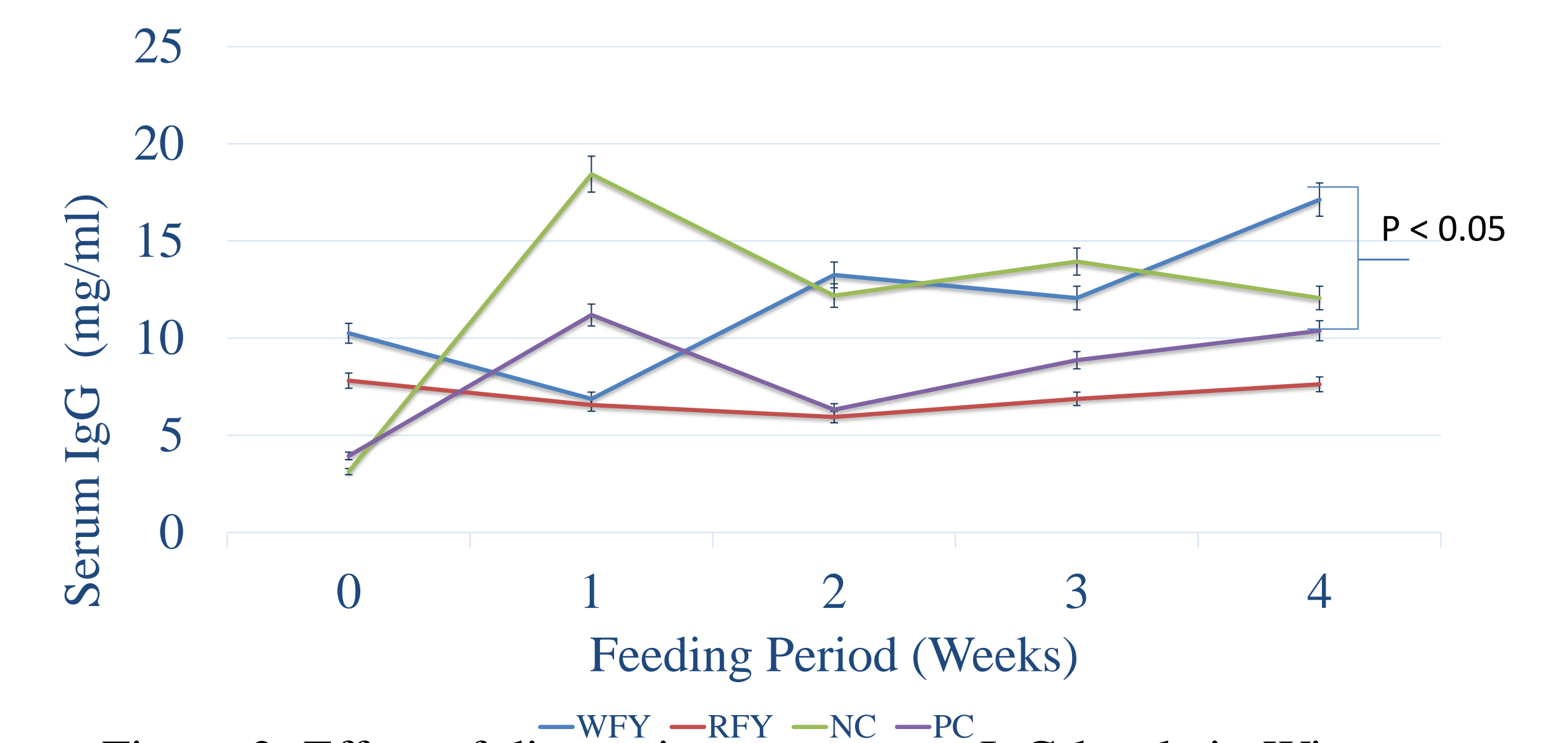


Figure 2. Effect of diet regimen on serum IgG levels in Wistar rat. Data are expressed as mean SD (n = 5). Values with different letters across and within the column are significantly different p < 0.05 using unpaired student's t-test.

Conclusion

Whole fat coconut yoghurt demonstrated (WFY) the ability to stimulate serum IgG antibody level in Wistar rat model. Comparatively, the reduced-fat coconut yoghurt (RFY) could not stimulate IgG in the serum. Although the WFY showed a significant reduction in serum cholesterol level, both yoghurts presented a marked increase in serum triglyceride concentration, this might be disadvantageous to obesity-prone individuals. The non-significant levels of protein and albumin observed in both WFY and RFY fed rats indicate that coconut yoghurt does not improve protein-related parameters. Furthermore, glucose levels in both WFY and RFY fed rats were significantly reduced. Both RFY and WFY has potential application in the diets of diabetics.

Acknowledgement

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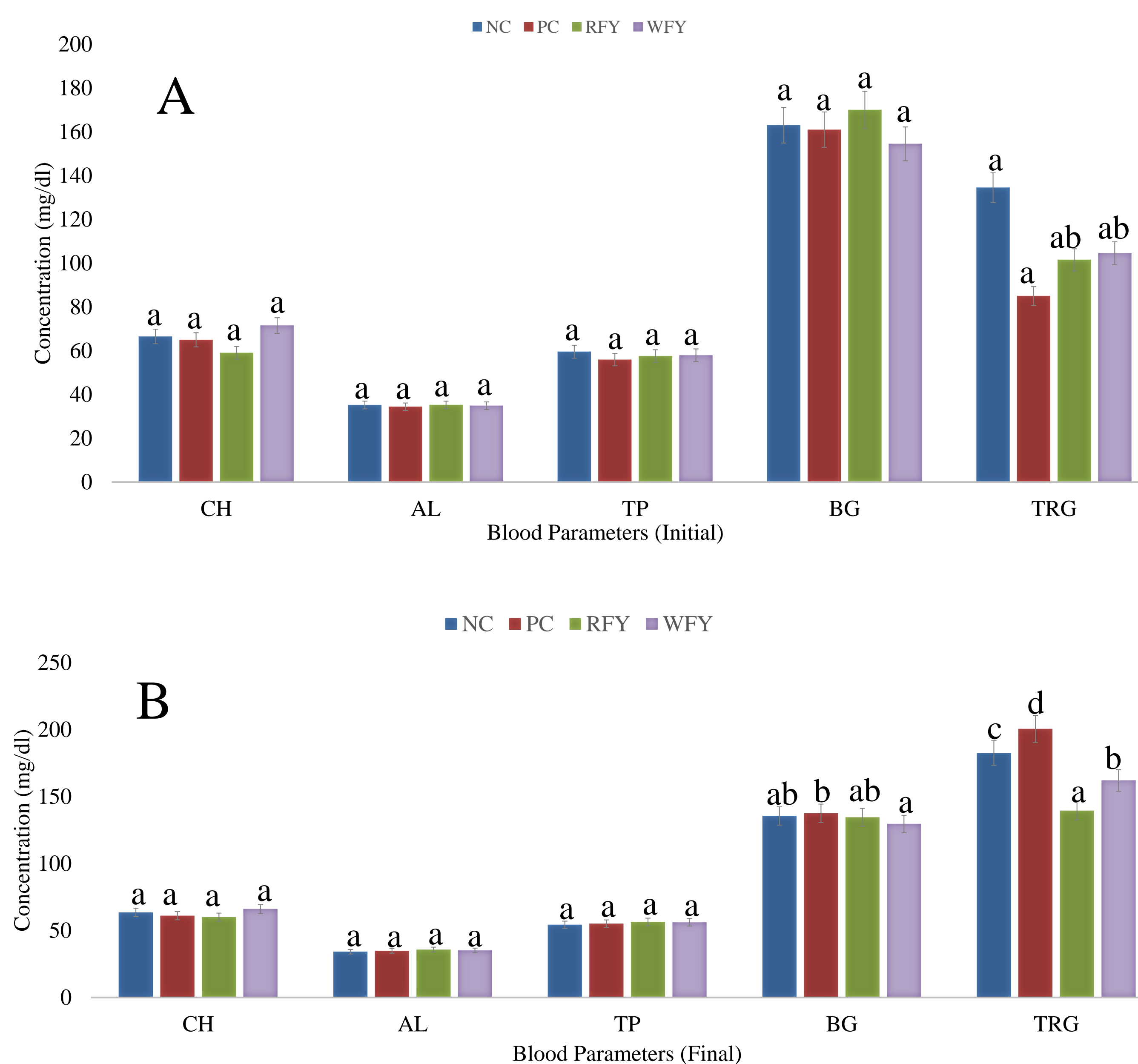


Figure 1B. A and B. Effect of treatment on blood parameters, A(initial) and B(Final). Different letters (a-d) in the same column are significantly different at p < 0.05 using DMRT. Cholesterol (CH), albumin (AL), total protein (TP), blood glucose (BG) and triglyceride (TRG).