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Development of cookies supplemented with different dried vegetable powders for their role in glucose and appetite control

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The potential role of different vegetables in regulation of appetite as well as postprandial glycemia has been reported in many in-vitro studies. These effects have not been yet studied for incorporation in value added food products and efficacy through human intervention. Therefore, the study was conducted to prepare and examine the comparative effects of cookies supplemented with bitter gourd (BGC), and other vegetables like spinach (SPC) and eggplant (EPC) on subjective appetite, blood glucose (BG) and insulin along with food intake in healthy young males through a randomized, cross over experiment. The subjects (24 years old, healthy men) were fed 300g of plain cookies (control) or supplemented with bitter gourd powder, BGC (10g/100g flour), or spinach powder, SPC (10g/100g flour), or eggplant powder, EPC (10g/100g flour)

following 12 hours fasting. An *ad libitum* pizza meal was served at 120min to measure the food intake. Subjective appetite, blood glucose, and insulin were measured at intervals from baseline to 120min. Post-treatment (0-120min) glucose, but not insulin, decreased following all the vegetables supplemented muffins compared to the control ($P < 0.0001$) with more pronounced effect of BGC. However, post-treatment avg. subjective appetite ($P = 0.0017$) and food intake ($P = 0.0021$) were reduced following BGC but not SPC and EPC. The bitter gourd supplemented baked foods possess potential more than other vegetables to regulate postprandial appetite & glycemic responses, without disproportionate increase in insulin concentration.

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