

## Development and process optimization of sugar free biscuit through fenugreek seed powder and natural sweetener (stevia)

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The developed sugar free biscuit was fortified with fenugreek seed powder and stevia was used as the natural sweetener. The functional component of fenugreek seed powder is trigonelline which is helpful in the production of insulin. In the present research work, 31 trials were performed by taking four factors viz. Skimmed Milk Powder (SMP), stevia, butter and fenugreek seed powder and responses were analyzed by using Response Surface Methodology (RSM) for optimization of developed sugar free biscuits. The composition for manufacturing of sugar free biscuits was 0.5 g to 6.5 g SMP, 0.5 g to 5.5 g stevia, 10 to 50 g butter and fenugreek seed powder 0.5 to 6.5%. Taking into account, these four factors were optimized by using RSM. The optimized parameters for developed sugar free biscuits include SMP (1.7727%), stevia (4.3485%), butter (37.8788%) and fenugreek seed powder (0.5%). After optimization of sugar free biscuit, diameter,

thickness and spread ratio was recorded as 5.04 cm, 0.82 cm and 4.92 cm, respectively. The final optimized product contains carbohydrate (76.75%), protein (5.90%), fat (14.85), ash (~1%), moisture (4%) and crude fiber (1.5%). The color of sugar free biscuit was recorded by hunter color flex and the L\*, a\*, b\*, value was 46.40, 12, 20.29, respectively. Fortified sugar free biscuits and refined wheat flour were analyzed for pasting properties of starch, gelatinization of starch, peak and final viscosity. Developed sugar free biscuit was rich in calcium and magnesium and their concentration were observed as 294.8 mg/100 g and 451.5 mg/100 g, respectively by ion chromatography. Atomic absorption spectroscopy of developed sugar free biscuits was also performed for mineral analysis and reported that it contains iron (1.93 mg/100 g), copper (0.065 mg/100 g) and zinc (0.325 mg/100 g).