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Development of *Spirulina* supplemented food bars for school age children**Shahid Bashir^{1, 2, 3}, Mian Kamran Sharif^{2, 3}, Syed Amir Gilani¹, Masood Sadiq Butt², Syed S H Rizvi³ and Faiz-Ul-Hassan Shah^{1, 2}**¹University of Lahore, Pakistan²University of Agriculture, Pakistan³Cornell University, USA

Spirulina (*Spirulina platensis*) belongs to “algae” and considered as the most nutrient dense food on the earth as it is an excellent source of protein (62%), thiamine (2.38 mg/100g), zinc (4.15 mg/100g) and iron (28.50 mg/100g) at the same time very low in calorific value (290 kcal/100). Due to its exceptional nutritional profile, it has proven to be a great option to fortify staples to make nutrient rich products to alleviate malnutrition without disturbing dietary habits. This study was designed to conduct protein quality and safety evaluation of the spirulina using Sprague Dawley rats using 45-day trial and further utilized for the development of food bars for school nutrition programs. Biological indices including growth i.e. protein efficiency ratio (1.87), net protein ratio (4.16) and relative net protein ratio (78.48) as well as nitrogen balance study that include true digestibility (74.32%), biological value (79.78%) and net protein utilization (60.24%) of spirulina proved it as a promising nutritional ingredient. Safety evaluation revealed no abnormal values related to test diets were observed in serum total protein, albumin, globulins and A/G ratio, glucose and insulin, lipid profile including cholesterol, triglycerides, LDL and HDL, liver enzymes (ALT, AST & ALP) and serum urea, creatinine and bilirubin as kidney function. Extruded crisps were prepared which was converted into food bars as a convenient nutrient delivery system for the school nutrition program. Consumption of 100 g of the nutrition bar can satisfy substantial RDA of protein (90-95%), vitamin A (85-92%), vitamin C (93-100%), iron (200%), and zinc (110%). Spirulina supplemented nutrition bars is an economic and shelf stable vehicle for providing macro and micro nutrients to the school age children.

Biography

Shahid Bashir has worked on characterization and utilization of spirulina for food applications during his Doctoral degree at University of Agriculture, Pakistan and Cornell University, USA. His current research interest is on fortification of food especially prepared from staple crops like wheat and rice. He is also working on value addition of agricultural commodities.

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