

SHORT COMMUNICATION

Nutritional enhancement of extruded vermicelli through incorporation of finger millet and carrot pomace

Sonali Johri* and Parul Sharma

Department of Food Science and Nutrition, Banasthali Vidyapith, Rajasthan – 304022, India.

**Email: sonalijohri@dei.ac.in*

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ABSTRACT

This study focused on the development and characterization of nutrient-enriched cold-extruded vermicelli using composite flour blends incorporating finger millet, pulse flour, corn flour, semolina, and carrot pomace. Two formulations were developed: control (100% semolina), composite formulation VI (40% finger millet, 20% corn flour, 20% red gram pulse flour, 10% semolina, 10% carrot pomace). Cold extrusion was performed using a single-screw extruder. Vermicelli demonstrated superior nutritional, functional attributes. Proximate analysis revealed that vermicelli had significantly higher protein (17.05 g), dietary fiber (14.7 g), and iron (6.58 mg) compared to the control. The fatty acid profile showed increased monounsaturated (0.49 g) and polyunsaturated fatty acids (1.33 g), as compared to the control (0.2 g monounsaturated and 0.6 g polyunsaturated fatty acids), indicating a healthier lipid composition. The cooking quality of the vermicelli was improved, as evidenced by a higher water absorption capacity (3.47%), expansion ratio (2.62), and a low cooking loss (2.21%), which falls within the acceptable range. These results demonstrate the potential of incorporating finger millets and carrot pomace as functional ingredients in the development of health-oriented, ready-to-cook vermicelli, offering enhanced nutritional quality along with value-added functional benefits.

Keywords: Finger millet, carrot pomace, vermicelli, cold extrusion, composite flour