

Development of Nutritionally and Functionally Enriched Low Amylose Rice Based Ready-to-eat Porridge Mix by Partial Incorporation of Chia and Quinoa Flour

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Abstract—The world food market is growing exponentially with increased demand for functional and ready-to-eat (RTE) convenient food products. With the prevalence of lifestyle diseases, consumers have become more health and nutrition conscious. Instant food mixes with the substitution of functional components has become the best choice for meeting up nutritional demand of every age group. Chia and quinoa seeds are popular for their rich nutritional and health promoting properties. In this study, low amylose chokuarice flour was substituted by a 1:1 chia and quinoa seed flour mix at 10%, 15% and 20% level and the starch component was hydrothermally pregelatinized to impart RTE characteristics. The effect of hydrothermal techniques, namely steaming and roasting on the nutritional, functional and sensory properties were assessed. Substitution resulted in the increased levels of proteins, dietary fibers and micronutrients. Amount of omega-3 fatty acid was recorded to be highest during steaming (up to 3.26 mg/100 g) than roasting (up to 2.54 mg/100g). Values of FRAP and CUPRAC significantly increased during both techniques. Roasting caused severe loss of phenolic and flavanoids than steaming. Chia mucilage has played the key role in developing viscosity and thickness in the optimized porridge mixes. Roasted aroma of the reconstituted porridge mixes was sensorial acknowledged. Porridge mix prepared by using both steaming and roasting techniques at 15% substitution level was the highest accepted on sensory evaluation, found to be rich in proteins (9.13/100g, 9.37/100g respectively), dietary fiber (4.91/100g, 4.99/100g respectively), micronutrients, PUFA and natural antioxidants.

Keywords: Porridge, Chia, Quinoa, Omega-3, Mucilage, Sensory.