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**The Thesis Submitted for the Degree of M.Sc
(In the field of Food Biotechnology)**

**Effect of substitution of quinoa flour with
wheat flour on quantitative and
qualitative characteristics of Iranian
fermented soup (Kashk-e-Zard)**

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Abstract

Iranian fermented soup (Kashk-e-Zard) is a fermented product that is produced on the basis of wheat flour and dairy products. The aim of the conducted research is to improve the quantitative and qualitative properties of this food product (Kashk-e-Zard) by substituting quinoa flour instead of wheat flour. Accordingly, quinoa flour has been replaced with wheat flour at six levels of 0, 20, 40, 60, 80 and 100 percent by weight and its effect on the physicochemical properties of pH, acidity, moisture, protein, protein digestibility, ash, fat, Total carbohydrate, mineral elements (calcium and zinc), antioxidant properties (DPPH), polyphenol compounds, phytic acid, ability to absorb mineral elements (calcium and zinc) and general acceptability were investigated. Also, the prepared samples were analyzed in terms of total microbial population, lactic acid bacteria, bacilli and cocci, coliform, *Staphylococcus aureus*, mold and yeast.

Increasing the replacement level increased the amount of acidity, fat, ash, zinc, improved zinc absorbability, and on the other hand, decreased calcium and phytic acid. Also, at replacement levels above 40%, the overall acceptance score was lower than the minimum acceptable score (7). Based on the recorded results regarding overall acceptance, zinc absorbability, antioxidant property and protein digestibility, the best formulation of quinoa flour replacement level is 40%. This result can probably be used in modifying the formulation of Kashk-e-Zard.

Keyword: Kashk-e-Zard, Phytic acid, Fermentation, Sensory properties.