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Nutritional composition of a range of traditional kishk products

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Kishk, also known as tarhana or burghul yoghurt, is a dried fermented milk and cereal product which has been consumed for centuries in many regions of Africa, Middle East and Western Asia. These traditional products are very nutritious as the minor constituents that are deficient in milk are supplemented by cereal (usually bulgur). There is variability in the nutritional composition of kishk due to regional diversity in the amount and type of milk and cereal ingredients used and use of other ingredients, which may include vegetables, such as peppers, tomatoes and onions, or spices. The objective of this study was to assess the nutritional composition of commercially available kishk products and determine their suitability as a base product for the development of a fortified blended food.

Eight kishk varieties were obtained from four different countries including Syria, Greece, Lebanon and Turkey; three of the samples contained red pepper (Rp) as an added ingredient. The moisture, protein and ash content of the kishk samples were determined according to A.O.A.C methods. The fat content of the samples was determined according to the IDF 9A method. The salt content was measured using the potentiometric method[(1)]. The samples were then milled to 0·5 mm prior to determination of starch and total dietary fibre content which were quantified using kits supplied by Megazyme (Co.Wicklow, Ireland).

	Moisture (%)		Starch (%)		Protein (%)		Fat (%)		Minerals (%)		Salt (%)		Fibre (%)	
Kishk sample	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE	Mean	SE
Syria (Mādanli)	9·2	0·4	57·7	1·4	11·1	0·0	2·7	0·0	5·5	0·1	4·5	0·5	9·1	0·2
Greece (Tarhana)	7·0	0·3	68·3	4·8	11·7	0·1	5·5	0·2	2·6	0·1	2·2	0·0	3·1	0·2
Lebanon (home-made)	9·6	0·3	40·7	3·0	18·2	0·1	15·1	0·8	4·4	0·1	2·7	0·5	8·7	0·3
Lebanon (factory-made)	9·1	0·2	42·0	2·3	17·5	0·1	9·6	0·1	6·5	0·0	5·4	0·1	8·3	0·1
Turkey (Karişik Tarhana)	11·2	0·2	57·0	2·4	10·9	0·0	2·7	0·6	5·5	0·3	4·8	0·1	3·8	0·2
Turkey (Tarsi çocuk), Rp	11·7	0·2	61·9	2·3	8·7	0·1	4·0	0·6	2·6	0·1	1·9	0·1	4·4	0·2
Turkey (Tarsi bebek), Rp	10·1	0·1	63·5	5·0	9·1	0·1	4·2	1·4	1·5	0·1	0·4	0·0	4·4	0·3
Turkey (Gediz Tarhana), Rp	14·5	0·2	62·8	0·3	9·4	0·1	3·4	1·0	2·4	0·1	1·5	0·0	5·6	0·2

Data represent three independent experiments; Rp: indicates red pepper as an ingredient.

The protein content (18·2 % and 17·5 %) and fat content (15·1 % and 9·6 %) were highest in the two samples sourced from Lebanon. The Lebanese samples also contained the highest fibre content (8·7 % and 8·3 %), with the exception of the Syrian kishk which had a fibre content of 9·1 %. The Greek tarhana had the highest starch content (68·3 %) and the lowest moisture content (7·0 %). Low moisture prevents microbial growth and enhances product stability. The samples containing red pepper as an added ingredient generally had a lower protein, mineral, salt and fibre content and a higher moisture content in comparison with the remaining samples. In conclusion, kishk products have excellent potential as base products with which to produce a novel class of Fortified Blended Foods (FBFs) for populations at risk of nutritional deficiency.

1. Fox PF (1963) *J Dairy Sci* **46**, 744–745.