

Well tasting, protein enriched meals for healthy ageing

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INTRODUCTION

Life expectancy is increasing, and the population of elderly is growing. A sufficient protein intake plays a central role in relation to healthy ageing including maintenance of muscle function and prevention of sarcopenia.



The aim of this study was to develop an appetizing meal based on high meat protein obtained by addition of pork (results not shown) and beef hydrolysates.

MATERIALS AND METHODS

Meatballs were developed with pork and beef hydrolysates added as a spray-dried powder. Four prototypes of meatballs (beef or pork) were used including different levels of hydrolysates (0%, 7%, 11% and 15%). To cover the bitterness of the hydrolysates, spices and chili were added to the meatballs. The concept of the meal was a ready-to-eat soup with meatballs.

NUTRITIONAL COMPOSITION* OF THE TOMATO SOUP WITH BEEF MEATBALLS. HB = HYDROLYSED BEEF

	Nutritional composition per serving**			
	0% hb	7% hb	11% hb	15% hb
Energy (kJ)	1014	1112	1167	1235
Fat (E%)	25	23	22	21
Carbohydrate (E%)	42	38	36	34
Protein (E%)	30	36	39	42
Fibre (E%)	3	3	3	3

* Generated with the Nutrition calculation programme

** 200 g soup + 100 g meatballs

A consumer test was performed, including a questionnaire and a sensory evaluation. The participants were from 46 to 89 years of age. Appropriateness statements were given, and the participants had to rate how much they agree or disagree with each statement (e.g. I think this product is: A good choice for people in need of extra protein) on a 7-point scale, 1 = I totally disagree and 7 = I totally agree.

RESULTS

AVERAGE LIKING SCORES OF TOMATO SOUP WITH BEEF MEATBALLS USING A 9-POINT SCALE

Beef	Beef hydrolysate added				P-values
	0%	7%	11%	15%	
Overall liking	6.3 ^a	6.0 ^a	6.2 ^a	6.5 ^a	0.12
Texture of soup	6.5 ^a	6.4 ^a	6.5 ^a	6.6 ^a	0.79
Texture of meatballs	5.4 ^a	5.7 ^{ab}	5.7 ^a	6.1 ^b	<0.05

There were no significant differences between either the beef or the pork products regarding overall liking, and the texture of the meatballs was even improved.

APPROPRIATENESS RATINGS - BEEF

	Beef	
	Mean	SD
Appetizing	4.3	1.7
Unsuitable for 60+	2.5	1.7
High quality	4.3	1.5
Tasty	4.3	1.6
Practical	4.4	1.5
Like to eat	4.0	2.0
Regular consumption	3.9	1.9
Not want to buy	3.4	2.1
Good choice for extra protein	5.0	1.4
Nutritional	4.8	1.4
Unhealthy	2.5	1.6
Artificial	3.1	1.8

CONCLUSION

- The products can be claimed as 'high protein', and 'the protein contributes to maintenance of muscle mass' can be used as a statement.
- Addition of up to 15% of hydrolysate to the meatballs did not affect overall liking of the products.
- The appropriateness questions were in average rated more or less neutral.
- Further product development is needed in order to increase liking of the soup with meatballs.



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