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Reduction of fat and Na content in takeaway food by recipe reformulation

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A growing body of evidence suggests that the poor nutritional quality of takeaway foods may contribute to a variety of negative health outcomes[1]. Simultaneously, food prepared out of the home is making up an increasing component of the Western diet and there is no expectation that this will stop expanding[2,3]. Therefore, it seems that the most effective approach to reduce the impact of takeaway food on public health is an improvement in the nutritional quality of food prepared outside the home by reformulation of recipes and changes in preparation practices.

The aim of this study was to reduce Na and fat content of takeaway foods by recipe reformulation and alterations to preparation processes. A Chinese meal (Chicken Chow Mein) was chosen and detailed information regarding ingredients and preparation methods of the dish were collected from four different Liverpool takeaway outlets. Recipe development work was undertaken to produce modified versions of the dishes (specific to each of the outlets) with improved nutritional profiles. The nutrient content of original and modified recipes was evaluated using 'Microdiet'^{TM} nutritional software. Sensory evaluation of original and modified dishes was also undertaken. Subjects who tested a single sample of a meal, either modified or original, were asked to rate their overall acceptability of the tested dish. Each meal was evaluated by at least eight participants. Acceptability was rated using a 9 point hedonic scale where 1 = dislike extremely and 9 = like extremely. A *t*-test was used to compare the acceptability of modified and original meals, statistical significance $P<0.05$.

	Na mg/portion		Fat g/portion		Acceptability mean			
					Original		Modified	
Outlet number	Original	Modified	Original	Modified	Mean	SD	Mean	SD
Outlet 1	5440	2520	35.5	24.0	6.69	0.85	7.66	0.98*
Outlet 2	4120	2720	27.0	19.5	8.00	0.57	6.69	1.25*
Outlet 3	2080	1840	24.0	21.0	7.25	0.46	6.33	1.37
Outlet 4	3720	2280	59.7	18.9	6.65	1.63	6.17	1.72

*indicates significant differences between original and modified meals.

It was observed that reduction of Na (by 12–54%) and fat (by 13–69%) content of Chow Mein dishes was possible to achieve without significant effect on their overall acceptability. No differences in acceptability level of original and modified meals from outlets 3 and 4 were noted. Moreover, the modified dish from outlet 1 received a higher score of acceptability when compared with the original meal. However, in the case of outlet 2, the original meal was preferred.

These results suggest that it is possible to reduce the Na and fat content of takeaway meals by recipe reformulations without decreasing consumer acceptability. However, the level of Na and fat reduction depends highly on their base content in the meals. A strategy involving recipe development and alternation in food preparation in takeaways may be an effective tool for reducing the negative impact of takeaway food consumption on public health.

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