

Playing with Proteins

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Abstract of presentation

I have recently become interested in functional foods, not so much from my own research background (which is in heat transfer and food engineering), but more so because of the students I have supervised or am currently supervising. In particular I will be discussing two projects that, while still in their infancy, have shown promise, and are concerned with replacing carbohydrates and or proteins with other proteins for desired functionality

First of all I will briefly describe Sean Nixon's work, who will be starting a Master of Engineering by thesis degree with me next year. Sean is the director of a small company that sells protein products to body-builders and athletes. He has recently been experimenting with certain ingredients with the aim of developing a frozen dessert which is high in protein but very low in fats and sugars, yet which has comparable eating characteristics to ice cream. Initial results have been promising, but further progress is needed to improve the texture and 'mouth-feel' of the dessert.

Secondly I will discuss Karam Wadi's work which has investigate the feasibility of adding meat protein to loaves of bread in order to reduce the gluten content, while also delivering the nutritional benefits of meat protein, and potentially allowing low-value meat cuts to be sold at greater value. Karam has performed a series of experiments where he prepared bread in which varying fractions of high-grade wheat flour were replaced by ground, freeze-dried meat fibres, and subsequently performed texture and customer acceptance tests on them. All the tests indicated that for up to 5% replacement of wheat flour by meat protein there was minor or negligible difference between the meat-protein loaf and the control (i.e. loaf without protein). When 10% of the flour was replaced by meat protein the porosity, hardness and colour were noticeably different, and the loaf had less consumer appeal than the control. The 20% meat-protein loaf continued this trend and had the lowest consumer appeal. A major drawback of these experiments was that taste-tests could not be performed since the meat protein was not edible; however it seems likely (based on the consumer responses to the aroma, texture and appearance of the loaves) that the 2.5% and 5% protein loaves would have similar appeal to the control. Further work will be aimed at discovering ways to increase the meat-protein content beyond 5% while maintaining consumer acceptability.