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[45] X. Shi, J. Chen, Y. Peng and X. Ruan, "Development of a Knowledge-Based Process Planning System for an Auto Panel," *Int. J. Adv. Manuf. Technol.*, vol. 19, pp. 898–904, 2002.
[46] G.C. Vosniakos, I. Segredou and T. Giannakakis, " Logic programming for process planning in the domain of sheet metal forming with progressive dies," *J. Intell. Manuf.*, vol.16, pp.479–497, 2005.
[47] S. Kumar and R. Singh, "A knowledge-based system to automate the selection of progressive die components," *Int. J. of Mater. Sci. & Surface Eng.*, vol.1, pp. 85-96, 2007.
[48] Y. Dequan, Z. Rui, C. Jun and Z. Zhen, "Research of knowledge based system for stamping process planning," *Int. J. Manuf. Technol.*, 29, pp. 663-669, 2006.
[49] W.L. Chan, M.W. Fu and J. Lu, "An integrated FEM and ANN methodology for metal-formed product design," *Eng. Appli. Artificial Intell.*, vol.21, pp. 1170– 1181, 2008.
[50] Chi Z, "Mining rules from stamping die designs," *3rd Int. Conf. Innovative Compu. Information & Control*, Dalian, 2008, pp.74 – 74.
[51] Z. Zhibing, L.Yuqi, D.Ting and L Zhigang, "Blank design and formability prediction of complicated progressive die stamping part using a multi-step unfolding method," *J. Mater. Process. Technol.*, vol.205, pp. 425–431, 2008.
[52] C.Y. Chu, S. B. Tor and G. A. Britton, "Theoretic algorithm for automatic operation sequencing for progressive die design," *Int. J. Prod. Res.*, vol.46, pp. 2965-2988, 2008.
[53] M. Ghatrehnaby and B. Arezoo, "A fully automated nesting and piloting system for progressive dies," *J. Mater. Process. Technol.*, vol.209, pp. 525–535, 2009.

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Maydis stigma Improves Physical Traits and Unchanged Sensory Properties of Beef and Chicken Patties

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***Abstract*—**The proximate composition, physical traits and sensory properties of beef and chicken patties incorporated with various level of dried cornsilk (*Maydis stigma*) were studied. The beef and chicken patties were formulated with either 2%, 4% or 6% of cornsilk. Both cooked beef and chicken patties incorporated with 6% cornsilk recorded the highest protein concentration at 23.3% and 28.42%, respectively. Both cooked beef and chicken patties containing 6% cornsilk significantly recorded the lowest concentration of fat at 11.4% and 14.60%, respectively. Beef and chicken patties formulated with 6% cornsilk recorded the highest cooking yield at 80.13% and 83.03% compared to other treatments. The inclusion of cornsilk did not change the sensory properties and consumer acceptability of cornsilk-based beef and chicken patties. Cornsilk fibre has been effective in improving cooking yield, moisture and fat retention of beef and chicken patties

***Keywords*—**cornsilk, beef and chicken patty, proximate composition, sensory evaluation.

I. INTRODUCTION

BEEF and chicken are two major important sources of protein. With the growth in world economy, the beef consumption has seen a significant increase in past and hence it is now the third most favored source of protein in meat consumption. World beef production and consumption is growing steadily and is estimated to grow further [1]. Worldwide consumption of chicken meat is also increase tremendously and parallel with its production. The chicken meat production is forecast to increase by 3% in 2010 to reach 73.7 million metric tons. This increment is influenced by the strength and sustainability of the upturn in the global economy [2].

Beef and chicken patties are amongst the most popularly consumed processed meat products in Malaysia and other parts of the world. Some of the reasons for such wide popularity are their affordable cost, availability in different tastes and longer shelf life. Extensive studies have been conducted to the use of various types of fat replacer and plant dietary fibre in processed meat products in improving dietary fibre and lowering fat content. The utilization of tapioca starch, oat fibre [3]-[6], cereal and fruit fibres [7]-[8], whey protein [5], palm based fat [9] on the physical, chemical and sensory properties of low-fat beef patties has been studied previously.

Presently, consumers are very concern about their diet and the food they have eaten. When peoples demand nutritious and healthy food products, processed meat producers have to focus their creation toward processed meats that are lean, low fat and high in protein content. Health concerns about fat utilization and changes in consumer's preferences have led to comprehensive research on low-fat foods [10]-[11]. The high contents of saturated fats and cholesterol have been a major problem, resulting in meat products becoming the subject of scrutiny by nutritional, medical, and consumer groups. The American Heart Association [12] and other health groups have recommended a decrease in the consumption of animal fats. Decreases in calories from fat, from 40% to 30% and in saturated fat intake from 18% to 10%, have also been recommended [13].

Reduction of fat in processed ground meat products presents a number of difficulties in terms of appearance, flavor and texture. Manufacturers have introduced several modifications in an attempt to offset the detrimental effects of reducing the fat level. These modifications include the use of non-meat ingredients that could help to convey desirable texture and, more important, enhance water-holding capacity [14]. In this regard, carbohydrates and dietary fibre have been successful in improving cooking yield, reducing formulation cost and enhancing texture [15].

Cornsilk (*Maydis stigma*) fibre refers to the collection of stigmas of the maize female flowers. The cornsilk threads are normally discarded during the processing of baby corn as a vegetable. Traditionally, infusion of cornsilks had been used as a therapeutic remedy. These ailments include inflammation of the urinary bladder and prostate and treatment for irritation of the urinary system. To date, numerous commercially viable traditional products prepared from cornsilk are available [17]. Cornsilk contain various chemicals, including proteins, vitamins, alkaloids, tannins and mineral salts, carbohydrates, steroids, and flavonoids as well as other volatile chemicals [18].

The pharmaceutical and biological activities of cornsilk constituents are well reported in the literatures. These include antibiotic activity of glycoside maysin [19], attractant activity toward corn earworm [20], purification and characterization of anticoagulant [21]. Other than these reported activities, some local species are consumed as tea, powdered as food additive and flavorings agents in several regions of the world [22]. However, the utilization of cornsilk in any meat product is never been studied.

Thus, this study investigated the physical traits and sensory properties of beef and patties formulated with added cornsilk fibre.

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