灌水摻假之肉類品質檢測

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摘 要

台灣許多肉商為了增加屠體和生鮮肉的重量以獲得不當利益，因此對屠體和生鮮肉作灌水的處理。本實驗主要探討對豬肉經過灌水摻假後的物化特性，實驗中使用豬的背最長肌注射10%（A）、20%（B）、30%（C）肉重之去離子水和10%肉重之10%（w/w）氯化鈉水溶液（D）和不做注射處理的對照組（E），於-20℃下冷凍48小時，再於4℃下解凍24小時，分析色澤、電導度、粗蛋白含量、解凍流失率組織結構的變化。另外，快速檢測的方法為使用觸碰與濾紙貼壓法來檢測肉品是否有摻雜水分。結果顯示在冷凍前和解凍後C組的L值均最高，粗蛋白含量為E＞D＞A＞B＞C，豬肉和豬肉滴液的電導度大小為D＞E＞A＞B＞C，組織切片觀察方面，經過注射處理的纖維組織結構有明顯的多處斷裂，而對照組組織纖維較完整；快速檢測法的結果發現用手指觸摸發現對照組（E）和注射氯化鈉溶液（D）的肉會有黏性，注射水之各組則沒有，當以濾紙覆蓋肉之表面，再以1Kg重物壓在濾紙上三秒後發現，B及C組之濾紙有顯著增重（p＜0.05），且除E及D組外其他各組之濾紙都有明顯的渲染。

關鍵詞 : 生鮮肉、水分摻假

目錄

參考文獻

參考文獻 1.包桂宗。1983。肉類的製造與食品機具。國興出版社。 2.林烈進。1996。屠宰後豬肉品質特性與熱性質特性之研究。碩士論文。國立中興大學。畜產學研究所。台中。 3.陳明造。1991。鮮肉的性質與管理。淑馨出版社。 4.陳明造。1995。畜產加工。三民書局。 5.陳明造。1997。肉品加工理論與應用，第256-258 頁。藝軒圖書出版社。台北市。 6.陳義弦。2004。鹽水注射對溫體去骨里脊豬排之物性及生化性狀之研究。碩士論文。國立屏東科技大學。畜產系。屏東 7.曾昭賓。2006。健康豬肉與病死豬肉生化特性之探討比較。碩士論文。私立大葉大學。生物產業科技學系。彰化。 8.彭清勇。2000。鮪魚肌肉中氧化肌紅蛋白還原對肌肉色澤之影響。博士論文。國立海洋大學。食品科學系。台北。 9.潘湘武。1990。雞肉筋蛋白（Chicken surimi)之試製其特性之研究。碩士論文。國立中興大學。畜牧學研究所。台中。 10.賴滋漢、柯文慶、金安兒。1984。 新鮮豬肉液態氮冷凍的研究. 農林學報。33(2)；23-38。 11.Adams, K. D.,

1977. Effects of electrical stimulation and high temperature pre-rigor conditioning on myofibrillar protein of bovine muscle. M. S. Thesis. Texas A & M University, College Station, Texas 77843. 12.Arihara, K., Cassens, R. G., Greaser, M. L., Luchansky, J. B. and Mozdziak, P. E. 1995. Localization of metmyoglobin-reductase enzyme NADH-cytochrome b5 reductase) system components in bovine skeletal muscle. Meat Sci. 39 :205-213. 13.Belton, P. S., K. J. Packer and T. E. Southon. 1987. Cl nuclear magnetic resonance studies of the interaction of chloride ions with meat in the presence of tripolyphosphate. J. Sci. Food Agric. 40:267-275. 14.Brewer, M. S., B. K. Rostogi, L. Argoudelis, and G. K. Sprouls. 1995. Sodium lactate/sodium chloride effects on aerobic plate counts and color of aerobically packaged ground pork. J. Food Sci. 60:58-62. 15.Cecchi, L. A., D. L. Huffman, W. R. Egbert, and W. R. Jones. 1988. Chemical and physical characteristics of beef chunk muscles: Effect of electrical stimulation, hot boning and high temperature conditioning. J. Food Sci. 53:411-415. 16.Cross, H. R.; Durland, P. R. and Seideman, S. C. 1986. Sensory quality of meat. In "Muscle as Food", Ed. by Bechtel, P. J., Pub. by Academic Press, Inc.New York, Sydney, pp. 279-288. 17.Dutson, T. R., G. C. Smith, and Z. L. Carpenter, 1980b. Lysosomal enzyme distribution in electrically stimulated ovine muscle. J. Food Sci. 45:1097 18.Ebashi, S. and Endo, M. 1968. Calcium and muscle contraction. Prog. Biophys. Mol. Biol. 18:123. 19.Fernandez, X., and E. Tornberg. 1994. The influence of post-mortem temperature and differing ultimate pH on the course of rigor and ageing in pig longissimus dorsi muscle. Meat Sci. 36:345-363. 20.Geesink, G. H., A. D. Bekhit, and R. Bickerstaffe. 2000. Rigor temperature and meat quality characteristics of lamb longissimus muscle. J. Anim. Sci. 78:2842-2848. 21.Honikel, K. O., P. Roncales, and R. Hamm. 1983. The influence of temperature on shortening and rigor onset in beef muscle. Meat Sci. 8:221-241. 22.Honikel, K. O. 1987. The water binding of meat. Fleischwirtsch 67:1098-1100. 23.Huffman, D. L., A. M. Ly and J. C. Cordray. 1981. Effect of salt concentration on quality of restructured pork chops. J. Food. Sci. 46:1563. 24.Karol O. H. 1988. The water binding of meat. Fleischwirtsch international(1):14-22 25.Kim, C. J., K. O. H. Honikel, R. Hamm, and P. Roncales. 1986. Sarcomere shortening of prerigor muscles and its influence on drip loss. Meat Sci. 16:267-282. 26.Koohmaraie, M. 1996. Biochemical factors regulating the toughening and tenderization processes of meat. Meat Sci. 43:193-201. 27.Koohmaraie, M., M. E. Doumit, and T. L. Wheeler. 1996. Meat toughening does not occur when rigor shortening is prevented. J. Anim. Sci. 74:2935-2942. 28.Lewis, D. F., K. H. M. Groves and J. H. Holgate. 1986. Action of polyphosphates in meat products. Food Microstr. 5:53. 29.Mandigo, R. W. and A. M. Booren. 1981. Restructured meats. p. 44.Pro. Nat ’ l. Beef Grading Conf., Ames, IA. 30.Medynski, A., E. Pospiech, and R. Kniat. 2000. Effect of various concentrations of lactic acid and sodium chloride on selected physico-chemical meat traits. Meat Sci. 55:285-290. 31.Miller, A. J., S. A. Ackerman and S. A. Palumbo, 1980. Effect of frozen storage on functionality of meat for processing. J. Food Sci. 45 : 1466-1471. 32.Nusbaum, R. P., J. G. Sebranek, D.G. Topel and R.E. Rust, 1983.Structural and palatability relationships in frozen ground beef patties as a function of freezing treaments and product formulation. Meat Sci. 8:135. 33.Offer, G., and J. Trinick. 1983. On the mechanism of water holding in meat: The swelling and shrinking of myofibrils. Meat Sci. 8:245-281. 34.Park, J. W., T. C. Lanier, Y. T. Keeton and D. D. Hamann, 1987. Use of cryoprotectants to stabilize functional properties of prerigor salted beef during frozen storage. J. Food Sci., 52 (3) : 537-542. 35.Rees, M. P., G. R. Trout, and R. D. Warner. 2003. The influence of the rate of pH decline on the rate of ageing for pork. I : interaction with method of suspension. Meat Sci. 65:791-804. 36.Sonaiya, E. B., J. R. Stouffer, and D. H. Beerman,1982. Electrical stimulation of mature cow carcasses and its effect on tenderness,myofibril protein degradation and fragmentation. J. Food sci. 47:889. 37.Torres, E., A. M. Pearson, J. I. Gary, A. M. Booren and M. Shimokomaki. 1988. Meat Sci. 23:51. 38.Trout, G. R. 1989. Color and bind strength of restructured pork chops : Effect of calcium carbonate and sodium alginate concentration. J. Food Sci. 54:1466-1470. 39.Trout, G. R. 1989. Variation in myoglobin denaturation and color of cooked beef, pork and turkey meat as influenced by pH, sodium chloride, sodium tripolyphosphate and cooking temperature. J. Food Sci. 54:536-540. 40.Topel, D. G., Bicknell, E. J., Preston, K. S., Christian, L. L. and Matsushima, C. Y. 1968. Porcine stress syndrome. Mod. Vet. Prac. 49:40. 41.Watabe, S., Hwang, G. C., Ushio, H., Hatae, K., Yamanaka, H. and Hashimoto, K. 1990. Acceleration of physicochemical change in carp muscle by washing in either chilled or heated water. J. Food Sci. 55:674-677, 692. 42.Yang Tom C, S. 1987. Freeze-texturized maine shrimp protein extract. J. Food Sci. 52 (3) : 601-608 43.Yokotsuka, T., Takimoto, and Izuka, S. 1955. Studies on the analytical method of total nitrogen in soy sauce by Kjedahl method. Seasoning Sci. 13:9