

STUDIES ON THE PREPARATION OF DEEP-FRIED GLUTEN BALLS FROM VITAL GLUTEN FLOUR

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ABSTRACT

DEEP-FRIED GLUTEN BALL IS A TRADITIONAL FOOD IN TAIWAN AND HAS A SPECIAL TASTE. IT IS VERY POPULAR BY THE VEGETARIANS. CLEAR FLOUR IS OFTEN USED AS RAW MATERIALS TO PRODUCE DEEP-FRIED GLUTEN BALL. ITS MANUFACTURING PROCESSES INCLUDE DOUGH-MAKING, RELAXATION, GLUTEN-WASHING, AGING, CUTTING AND SHAPING INTO BALLS, DEEP-FRYING, AND COOLING. IN THE GLUTEN-WASHING STEP, THERE ALWAYS PRODUCES A LOT OF WASTEWATER CONTAINING STARCH AND RESULT IN A SERIOUS ENVIRONMENTAL POLLUTION. THE USE OF VITAL GLUTEN FLOUR TO PRODUCE DEEP-FRIED GLUTEN BALLS CAN AVOID POLLUTING THE ENVIRONMENT. HOWEVER, THE TEXTURE OF GLUTEN DOUGH MADE FROM VITAL GLUTEN FLOUR IS TOO STRONG TO APPLY TO THE MACHINES. IN ADDITION, THE FRYING OIL, OFTEN SOYBEAN OIL, USED TO PRODUCE DEEP-FRIED GLUTEN BALLS IS EASILY ABUSED AT HIGH TEMPERATURES. THUS, THE MANUFACTURING CONDITIONS OF DEEP-FRIED GLUTEN BALLS FROM VITAL GLUTEN FLOUR AND THE STABILITY OF THE FRYING OIL CONTAINING PALM OIL WERE INVESTIGATED IN THIS RESEARCH. THIS RESEARCH INCLUDES THREE SECTIONS. FIRST, THE MANUFACTURING CONDITIONS OF DEEP-FRIED GLUTEN BALLS FROM VITAL GLUTEN FLOUR WITHOUT THE ADDITION OF GLUTEN DOUGH IMPROVERS WERE STUDIED. THE RESULTS SHOWED THAT DEEP-FRIED GLUTEN BALLS OF HIGH QUALITY CAN BE PRODUCED FROM THE VITAL GLUTEN FLOUR MIXED WITH WATER AT THE RATIO OF 60/100 (GLUTEN/WATER) THROUGH THE PROCEDURES OF STIRRING FOR 10 MIN TO FORM A GLUTEN DOUGH, CUTTING AND SHAPING INTO BALLS, DEEP-FRYING AND COOLING. SECOND, THE EFFECTS OF GLUTEN DOUGH IMPROVERS ON THE QUALITY OF DEEP-FRIED GLUTEN BALLS MADE FROM VITAL GLUTEN FLOUR WERE INVESTIGATED. THE GLUTEN DOUGH IMPROVERS USED IN THIS STUDY ARE CYSTEINE, ASCORBIC ACID, AND ACETIC ACID. THE OPTIMAL CONCENTRATIONS OF AQUEOUS CYSTEINE, ASCORBIC ACID AND ACETIC ACID SOLUTION REPLACING WATER TO MIX WITH VITAL GLUTEN FLOUR FOR PRODUCING DEEP-FRIED GLUTEN BALLS OF HIGH QUALITY WERE 10-3, 10-5, AND 10-8M, RESPECTIVELY, AND 10-3M OF CYSTEINE SOLUTION WAS THE BEST ONE. THIRD, THE OXIDATIVE STABILITY OF GLUTEN BALLS MADE FROM VITAL GLUTEN FLOUR AND DEEP-FRIED IN THE FRYING OIL CONTAINING PALM OIL WAS STUDIED. THE RESULTS SHOWED THAT THE ACID VALUES, ALKALI COLOR, AND FOS READINGS OF THE OIL CONTAINED IN THE GLUTEN BALLS DEEP-FRIED IN PALM OIL WERE HIGHER THAN THOSE OF THE OIL CONTAINED IN THE GLUTEN BALLS DEEP-FRIED IN SOYBEAN OIL. THIS MIGHT BE CAUSED BY THE NATIVE PROPERTIES OF PALM OIL RICH IN FREE FATTY ACIDS AND CAROTENOIDS. HOWEVER, THE UV232 VALUE OF THE OIL CONTAINED IN THE GLUTEN BALLS DEEP-FRIED IN PALM OIL WAS LOWER THAN THAT OF THE OIL CONTAINED IN THE GLUTEN BALLS DEEP-FRIED IN SOYBEAN OIL. THIS RESULT REVEALS THAT DEEP-FRYING IN THE OIL CONTAINING PALM OIL CAN IMPROVE THE OXIDATIVE STABILITY OF DEEP-FRIED GLUTEN BALLS DURING STORAGE

Keywords : DEEP-FRIED GLUTEN BALL, FRYING OIL, GLUTEN DOUGH IMPROVERS, PALM OIL, VITAL GLUTEN.

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