

## EVALUATION OF THE COMPLIANCE WITH THE GOOD MANUFACTURING PRACTICES (GMP) OF A LINE OF SAUCES AND DRESSINGS AND ITS EFFECT ON FOOD SAFETY AND SHELF-LIFE

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Nowadays, small companies face challenges in implementing safety management systems to safeguard consumer health. Poor hygiene facilitates cross-contamination affecting food safety. In addition, the formulation of products such as low-sodium and low-calorie, constitutes a challenge from a microbiological point of view. Therefore, the objective of this work was to improve the quality and safety of a chickpea paste and “cochayuyo” algae dressing by assessing the compliance with the good manufacturing practices (GMP) in the processing line and a shelf-life study. The initial diagnosis was conducted by applying the GMP checklist, and microbiology tests to the raw material, finished product, food handlers, 20 food contact surfaces, and 5 sectors of the processing environment for air quality control. Corrective actions were then implemented, and the effect was evaluated on the same parameters. The shelf-life study included microbiological, physical, chemical, and sensory analysis, and was conducted before and after the intervention. At the beginning, the overall compliance with GMP checklist was 64.1%, failing in the topics “cleaning and sanitation”, “training of personnel”, and “reception of raw materials” (25, 0, and 50 % compliance, respectively). Microbiological counts of raw materials exceeded the Chilean Sanitary Food Regulation (Article N°173) as follows: “cochayuyo” (total aerobic count, TAC  $4.0 \times 10^5$  CFU/g, and molds  $7.3 \times 10^2$  CFU/g), and chickpea (yeasts  $7.8 \times 10^3$  CFU/g). However, the final products met the microbiological requirements. Additionally, 70% of the surfaces exceeded the TAC counts. Notwithstanding, all environmental samples (air quality) met the requirements for TAC, molds and yeasts. The handlers presented absence of *E. coli* and *S. aureus* in hands and nasopharyngeal area. The main corrective actions were the creation of a procedure’s manual, increase the frequency of audits, and systematization of records. After the implementation, there was an improvement in overall compliance (84.6%). All topics achieved a compliance > 70% except “training of personnel” (50%). The counts of raw materials were reduced: “cochayuyo” (TAC  $2.3 \times 10^3$  CFU/g, and molds  $2.4 \times 10^1$  CFU/g), and chickpea (yeasts  $1.6 \times 10^2$  CFU/g). The surfaces improved their condition (55% “good” and 5% “excellent”). The shelf-life was enhanced from 120 to 270 days for the cochayuyo dressing, and from 30 to 150 days for the chickpea paste, complying with all microbiological criteria, physical, chemical and sensory parameters. Therefore, this work demonstrated the need to constantly audit the different points of the production line, not only the final product. Improvements in safety and shelf-life of the “cochayuyo” dressing and chickpea paste were possible due to the systematic implementation of GMP and the continuous improvement.





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