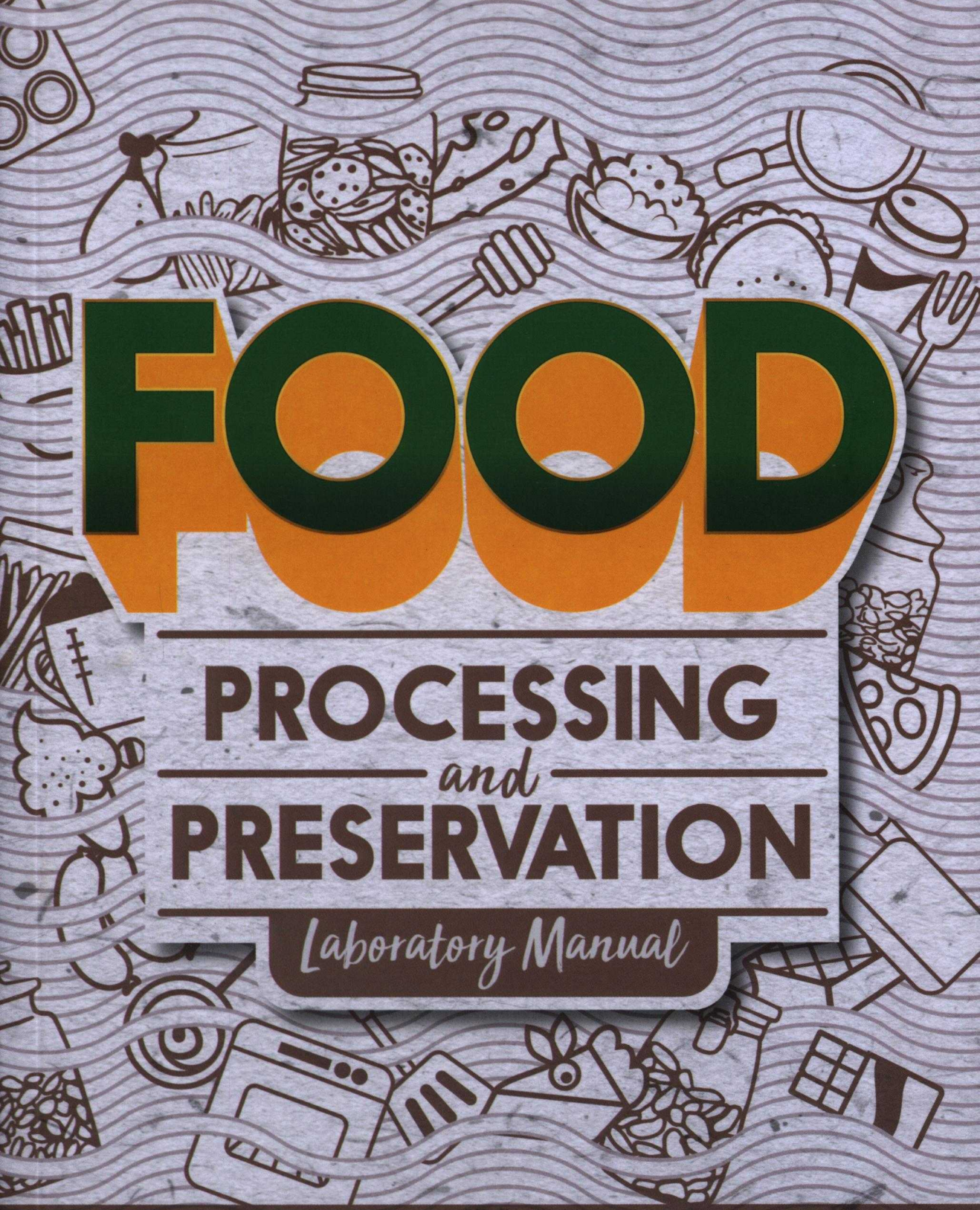

FOOD PROCESSING and PRESERVATION

Laboratory Manual

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PREFACE

In today's market, there is a wide array of food items crafted by food producers to meet consumer demands. Transforming these plant and animal-derived materials into consumable food products poses a formidable challenge for food manufacturers as they endeavour to preserve the nutritional content and overall quality of the end product. Consequently, it is crucial to grasp the principles and methodologies applied during the processing of these raw materials into edible goods.

The aim of this laboratory manual is to acquaint students with the various methodologies employed in the fields of food processing and preservation. Food processing involves the transformation of plant or animal-derived materials into consumable goods like jams, canned products, sausages, and baked items. Conversely, food preservation encompasses techniques for treating and managing food to regulate, minimise, or eradicate microorganisms, thereby preserving and extending the shelf life of food items. These two procedures encompass a variety of approaches, including the incorporation of chemical additives, drying, crystallisation, sugaring, and fermentation. The amalgamation of these methodologies results in the production of food products that exhibit improved quality concerning nutritional properties and sensory attributes.

This manual includes seven food preservation and manufacturing experiments to teach students methods, practical skills, and reporting. It aims to enhance students' self-sustainability and entrepreneurship skills.

EXPERIMENT 1
PRINCIPLE OF CANNING (MEAT PRODUCT)

PRODUCTION OF CANNED CHICKEN CURRY

Introduction

By following these steps, the production of canned chicken curry aligns with food safety standards, providing a convenient and microbiologically stable product suitable for long-term storage and commercial distribution.

The process begins with the blanching of vegetables, which serves to inactivate enzymes, reduce microbial load, and preserve texture, colour, and nutritional quality. Next, the curry paste and dried ingredients undergo frying, a crucial step that enhances flavour through Maillard reactions, reduces moisture content, and eliminates bacteria, contributing to both food safety and sensory attributes.

Since chicken curry is classified as a low-acid food (pH > 4.6), proper thermal processing is necessary to prevent the growth of Clostridium botulinum, a heat-resistant spore-forming bacterium that can cause foodborne illness. To achieve uniform heat distribution and ensure thorough cooking, the exhausting process is performed to remove air trapped within the food and can minimise pressure variations during heat processing.

Before filling, sterilising the cans is a critical step to prevent microbial contamination and maintain a sterile environment. Once sealed, the cans undergo retort processing in an autoclave, where they are subjected to high temperatures (typically 116–121°C) and controlled pressure. This step effectively destroys pathogenic and spoilage microorganisms, ensuring that the canned chicken curry remains safe, shelf-stable, and of high quality for an extended period.

The **FOOD PRESERVATION and MANUFACTURING Laboratory Manual (FST558)** applies the theoretical concepts covered in the associated lecture. Through laboratory exercises, this course actively involves students in applying the ideas and procedures that support food production and preservation. Student laboratory reports, which represent their practical skills developed during these sessions, will be used to evaluate their performance.

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