



Australian Government

FBPFST5005 Examine the biochemical properties of food

Release: 1

FBPFST5005 Examine the biochemical properties of food

Modification History

Release	Comments
Release 1	This version released with the FBP Food, Beverage and Pharmaceutical Training Package Version 2.0.

Application

This unit of competency describes the skills and knowledge required to examine biochemical substances and reactions and apply knowledge to food product development and processing. The individual is required to utilise deep knowledge of food biochemistry.

This unit applies to individuals who are responsible for maintaining product safety, quality and efficiency in food processing, including general food production, meat and seafood industries, and undertake roles in technical management and process management.

No occupational licensing or certification requirements apply to this unit at the time of publication. However, legislative and regulatory requirements for food processing exist, so local requirements must be checked. All work must comply with Australian food safety standards and relevant codes of practice.

Pre-requisite Unit

Nil

Unit Sector

Food science and technology (FST)

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Use and apply terms and concepts relating to organic substances important in food processing	1.1 Use biochemical terminology relating to food processing 1.2 Apply relevant concepts to explain the biochemistry in food processing

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
2. Identify biochemical compounds and explain biochemical reactions important in food processing	2.1 Identify and classify biochemical carbohydrates including amino acids, proteins and lipids 2.2 Identify the molecular structure of important biochemical compounds 2.3 Identify chemical and physical behaviour associated with carbohydrates, amino acids, proteins and lipids, including the molecular processes taking place 2.4 Perform basic tests to identify biochemical reactions and the associated physical and chemical changes in food processing
3. Assess the impact of food processing operations on the biochemistry of processed food products	3.1 Identify biochemical macro constituents and micro constituents of food 3.2 Assess the effect of processing on biochemistry and nutritional value of foodstuffs 3.3 Identify biochemical actions of food additives 3.4 Identify the biochemical principles relating to the spoilage and preservation of foods
4. Extract samples of product or raw materials for testing and apply the results to food production processes	4.1 Establish properties of biochemical compounds and their extraction techniques for a food processing operation 4.2 Conduct sampling as specified by the sampling plan 4.3 Maintain sample purity and integrity prior to testing 4.4 Use the results of tests to assist with ingredient selection and food labelling

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential for performance in this unit of competency but are not explicit in the performance criteria.

Skill	Description
Reading	- Interpret documentation related to biochemistry - Interpret industry standards
Numeracy	Interpret analytical results

Skill	Description
	• Maintain and analyse data from tests • Determine calibration procedures and schedule for test equipment
Interact with others	• Clarify the purpose and possible actions to be taken as a result of work-related communications • Use industry standard terminology
Get the work done	• Problem-solve issues as they arise

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
FBPFST5005 Examine the biochemical properties of food	FDFST5005A Identify the biochemical properties of food	Updated to meet Standards for Training Packages Minor changes to Performance Criteria to clarify intent Unit title updated	Equivalent unit

Links

Companion Volume Implementation Guides are found in VETNet: -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=78b15323-cd38-483e-aad7-1159b570a5c4>

Assessment Requirements for FBPFST5005 Examine the biochemical properties of food

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Performance Evidence

An individual demonstrating competency in this unit must satisfy all of the elements and performance criteria of this unit.

There must be evidence that the individual has examined the biochemical properties of food, including:

- performing three different tests to identify biochemical compounds in food
- identifying the molecular structures, and chemical and physical behaviours, of carbohydrates, amino acids, proteins and lipids when processed in food
- processing, producing or extracting representative samples of biochemical compounds
- identifying the macro and micro constituents of two different processed food products
- identifying the biochemical action of at least three different food additives
- interpreting results of tests and describing the implications for food processing.

Knowledge Evidence

An individual must be able to demonstrate the knowledge required to perform the tasks outlined in the elements and performance criteria of this unit. This includes knowledge of:

- terminology relating to biochemical substances
- the structure and properties of the biochemical compounds carbohydrates including amino acids, proteins and lipids
- the major chemical constituents found in foods
- biochemical action of important food additives
- the molecular structures for important biochemical compounds
- the chemical and physical behaviour associated with carbohydrates, amino acids, proteins and lipids in terms of molecular theory
- sampling and testing techniques to determine the components and biochemical reactions for food products
- general equipment used for analysis, including hotplates, ovens, melting point and boiling point apparatus, steam baths, appropriate glassware and chemicals
- analytical instruments, including spectrometric instruments, including:

- ultraviolet/visible
- infrared, including Fourier transform infrared and near infrared
- atomic absorption, including flame and flameless
- basic tests to identify biologically important biochemical materials, including:
 - Benedict's test for glucose
 - Lugol's iodine test for starch
 - biuret test for protein
 - tests for fats and oils
- common biochemical reactions relevant to food processing operations, including:
 - oxidation
 - hydrolysis
 - enzymic reactions
 - lipid isomerisation
 - lipid polymerisation
 - polysaccharide synthesis
 - glycolysis
 - protein denaturing
- health and safety hazards in the workplace and controls relating to work processes.

Assessment Conditions

Assessment of skills must take place under the following conditions:

- physical conditions:
 - skills must be demonstrated in a workplace setting or an environment that accurately represents a real workplace
- resources, equipment and materials:
 - laboratory and related equipment, manufacturers' advice and operating procedures
- specifications:
 - tests used to report relevant product/process information and recorded results.

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

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