Nutrition and Food Science

The Defence Science and Technology Organisation (DSTO) is the Australian Government’s lead agency charged with applying science and technology to protect and defend Australia and its national interests. DSTO delivers expert, impartial advice and innovative solutions for Defence and other elements of national security.

Overview

The defence nutrition and food science research area at DSTO Scottsdale in Tasmania was established in 1954. The purpose of this area is to research, develop and produce specialised food and feeding systems, and advise on human health and nutrition in support of Australia’s defence. The research and development efforts integrate chemistry, biochemistry, food technology, material science, microbiology, nutrition and dietetics, as well as a specialised food production facility.

The activities undertaken by the nutrition and food group include:

- The development of new ration concepts that are tailored to specific operational scenarios, environments and functions;
- The development of a new fresh feeding scale based on military recommended dietary intakes which take into account the results of DSTO research into ADF nutritional requirements;
- Healthy eating promotion to assist in the sustainment of ADF members’ performance and the maintenance of their health and wellbeing;
- Improvements to combat ration pack supply chain logistics;
- Provision of scientific and technological support to the Quality Assurance program for combat ration packs.

Benefits to the ADF

During typical operations, the average male Australian soldier expends approximately 15,000 kilojoules per day; this is a greater rate of physical work output than applies to the vast majority of civilian Australians. The daily diet of ADF personnel must not only supply these high levels of energy, it must also provide a nutritional balance that enhances physical fitness, mental alertness, and general health and well-being, often under the most arduous environmental and psychological conditions. Through its research and advice on appropriate nutrition, food and feeding regimes, the defence nutrition research area ensures that ADF personnel achieve high levels of nutritional and health status in order to maximise performance, reduce health problems, and prevent injuries.
Key capabilities

DSTO’s defence nutrition and food science capabilities comprise three key areas:

- Nutrition and dietetics;
- Food science and technology; and
- The food production line.

The nutrition and dietetics, and food science and technology capabilities work in collaboration to support the maintenance of high physical and cognitive performance. They aim to achieve greater sustainability by improving the nutritional and health status of ADF personnel through the provision of appropriate food and feeding regimes.

Nutrition and dietetics

The nutrition and dietetics area conducts research into nutritional requirements, nutritional health diagnostics, health surveillance systems, roles of nutrients in disease prevention and performance enhancement, and nutritional assessment of foods.

Food science and technology

The food science and technology area is underpinned by packaging technology, food process engineering, food chemistry, analytical and physical chemistry and consumer science. It has expertise in Quality Assurance and food standards.

Food production line

DSTO Scottsdale also manufactures specialised food products for the ADF.

Collaboration

DSTO draws on the resources, personnel and expertise of external organisations, companies and institutions to contribute to research programs and assist with the development of a national industry base that supports the ADF.

Achievements

DSTO’s 50+ years of operations in defence nutrition and food science have been marked by many breakthroughs and developments in the area of nutritional well-being for ADF personnel. The evolution of ration packs over that period is a testament to the defence nutrition work undertaken in Scottsdale.

Recent achievements include:

- The development of a new Australian Defence Force Fresh Food Provisioning Scale by DSTO that will ensure troops are fed according to their nutritional requirements. This has the potential to reduce wastage and to impact positively on the nutritional status of ADF members, including reduced numbers of the overweight and obese.
- The development of prototype Hot Weather Rations Packs which, in a field trial, received higher acceptability ratings and led to significantly greater consumption rates than the existing combat rations.

Specialised facilities

DSTO Scottsdale has a food technology, microbiology and chemistry laboratory furnished with specialised equipment for conducting a variety of analyses on foods. It also has a sensory evaluation facility, and temperature/humidity controlled cabinets for shelf-life trials. The production line is equipped with cooking and freeze-drying facilities to produce freeze-dried meals and other specialised components of combat ration packs.

Further information

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Loading the research freezer. Participant in taste testing booth. Specialised food production in support of the ADF.