

## U.S. Department of Defense's Perspective on Funding for Research on Whole Grains and Health

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The mission of military nutrition research is to identify and apply nutritional strategies to sustain and enhance physical and mental performance and maintain the health of military personnel conducting extended operations in all environmental extremes. DOD's nutrition research is conducted at the U.S. Army Research Institute of Environmental Medicine's (USARIEM) Military Nutrition Division (MND) located in Natick, MA. DOD's combat ration R&D is conducted by the U.S. Army Natick Soldier RD&E Center in Natick, MA. DOD's nutrition research and combat ration development programs are highly coordinated and mutually supportive.

Combat rations for individual soldiers are designed to be low-weight, low-volume, of high nutrition density, ready-to-eat, shelf-stable, and highly acceptable to our war fighters. Because of these design features, combat rations are limited in whole grains but usually contain a bread item.

In 1985, the Army leadership requested USARIEM to conduct a series of studies to evaluate the effectiveness of dining facility initiatives to improve soldiers' eating habits. The focus of the initiatives was to reduce consumption of total fats to not more than 35% of calories. The strategies used included serving low fat milk, educating cooks and diners, and modifying menus, recipes, and food preparation methods.

As shown in Table I, these dining facility initiatives were very effective in reducing total fat intakes (% fat calories) in the military dining facilities (DFACs) studied from an average of 45% pre-initiatives to 32% post-initiatives. (1)

As shown in Table II, total cholesterol intakes were also greatly reduced and total carbohydrate intakes correspondingly increased in both male and female West Point cadets. (3,4)

During the past four years there has been a renewed interest in improving DFACs and the quality of food service. In August 2010, the U.S. Air Force (USAF) awarded a \$10.3 M contract to AMARACK for a food transformation initiative (FTI) at six USAF bases. The FTI is a pilot program designed to improve the quality, variety, and availability of food operations and to increase utilization of DFACs by airman and their families.

In December 2010, all the Services approved new DOD

menu standards with the primary goal of promoting and incorporating healthier foods in the DFACs. All Army DFACs will follow the DOD Menu Standards to include offering sliced bread containing whole grains, whole grain waffles and French toast, whole grain cereals, and whole grain pasta. The Army incorporated the DOD menu standards into a soldier fueling initiative (SFI) announced by LT. General Mark Hertling, Deputy Commanding General for Initial Military Training (IMT) in September 2010. The SFI will modify Army garrison menu standards to promote healthier eating and it will prescribe standardized menus, recipes, preparation methods, and portion sizes at all IMT DFACs. The SFI will also market nutrition awareness and healthier food and beverage choices. A total of twelve Army installations with IMT DFACs will implement the program that is designed to increase IMT soldier fitness and

**Table I**

**Trends in Total Fat Intakes (% Fat Cals) in Military Dining Facilities**

	<b>Pre-Initiatives</b>	<b>Post-Initiatives</b>
1952 Ft Sheridan	46.0	37.6
1953 Ft Riley	48.6	38.4
1966 Ft Huachuca	45.6	38.2
1971 Lowery AFB	42.5	38.8
1976 West Point	41.8	34
1977 USS Saratoga	42.1	34

**Comparison to United States Civilian Population**

	<b>1977-78 USDA NFCS</b>	<b>1985-86 USDA CFS II</b>
Males 20-29 yrs	41	36
Females 20-29 yrs	40	36
<b>1976-80 NHANES II</b>		
Males 20-29 yrs	36	
Females 20-29 yrs	36	

**Table II. USMA West Point Cadet Studies**

	<b>1979</b>		<b>1990</b>	
	<b>Males</b>	<b>Females</b>	<b>Males</b>	<b>Females</b>
Energy (kcal)	3738	2454	3654	2314
Protein (%kcal)	13	13	15	14
Fat (% kcal)	38	38	32	31
CHO (% kcal)	46	46	54	56
Chol. (mg/day)	600	400	420	234

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performance while addressing problems of poor nutrition awareness and practices and their long term effects. The healthy foods offered will include whole grain breads, cereals, and pasta.

On January 27, 2011, First Lady Michelle Obama visited Ft. Jackson, SC, to observe the post's new "Fueling the Soldier" initiative with Lt. Gen. Hertling. First Lady Obama also visited the Hercules Dining Facility at Little Rock AFB on February 9, 2012, to observe the Food Transformation Initiative on base. She was accompanied by Jonathan Woodson, M.D., Assistant Secretary of Defense for Health Affairs, who announced the Military Health System's new obesity and nutrition awareness campaign. The campaign will include changes to bring more fruits, vegetables, whole grains, and entrée choices that are lower in fat to 1,100 service member dining facilities in the coming months. Healthier foods will also become more available in DOD schools and other places where service members and their families purchase food on base, including vending machines and snack bars.

Major Aaron Crombie, from the Military Nutrition Division of USARIEM, has recently conducted dining facility intervention studies at ten Ft. Bragg, NC, DFACs utilizing digital photography and visual estimation techniques to assess food and nutrient intakes of male enlisted soldiers. Energy, total fat, percent Kcals from fat, saturated fat, and refined grain intakes during a test meal were significantly ( $P<0.01$ ) reduced while improving ( $P<0.01$ ) six customer satisfaction indices in five intervention DFACs compared to five control DFACs after six and twelve months of intervention. Major Crombie noted in this recently published article (2) that some elements of the intervention did not appear to have the desired effect, despite alternative choices being offered daily for several months. His data indicated that when given a choice, soldiers often choose the less optimal product. For example, despite providing increased access to whole grain items throughout the DFAC, these items were rarely chosen; brown rice and whole wheat bread items were not popular choices with soldiers. If these items were continually discarded or not selected, DFAC man-

agers would be reluctant to order those items.

In summary, during the past 28 years, a number of health promotion initiatives have been conducted at DOD dining facilities with the goal of improving the nutritional quality of the meals consumed by military personnel. While most of the efforts to reduce the consumption of total fats and cholesterol by such efforts as substituting low fat milk for whole milk have been successful, more recent focused efforts to increase the intake of whole grain food products have not been proven to be successful. When given a choice, young military personnel prefer to consume refined grains rather than whole grain products. Therefore, there may be a need to conduct a study in a military dining facility to observe the effect of substituting refined grains with whole grains.

#### References:

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