



DEVELOPMENT OF THE USDA AMERICAN INDIAN AND ALASKA NATIVE FOODS DATABASE



P. Pehrsson¹, A. Sorenson², J. Hallfrisch³(ret.), L. Amy¹, and J. Holden¹,
¹Nutrient Data Lab, ARS, USDA, Beltsville, MD, ²Utah State University, Logan, UT,
 and ³Diet and Human Performance Lab, ARS, USDA, Beltsville, MD

ABSTRACT

The U.S. Department of Agriculture's (USDA) American Indian and Alaska Native (AIAN) Foods Database is being developed to include high quality data for 200 traditional AIAN foods and to support educational tools to counter growing health problems in the AIAN population, including obesity, diabetes, and cancer. Supported by USDA, the National Institutes of Health Office of Research on Minority Health, and the Indian Health Service, it will include indigenous foods (hunted and foraged) and traditional native recipes. Most of these foods are major contributors of health-promoting nutrients and are highly consumed, primarily among the elderly; some are no longer consumed but were mainstays of the native diet. A sampling frame was developed for the contiguous 48 states and includes American Indians associated with a tribe and reservation. Representative foods are procured and assayed for over 100 nutrients, using state-of-the-art analytical methodology. Tribal public health professionals will use these data to develop nutrition education tools to encourage the return to more traditional, healthier foods. To date, approximately 30 foods from the Navajo reservation in Arizona and New Mexico have been analyzed. Traditional foods are also being collected as part of a collaboration with the Ft. Hall, Idaho Shoshone Bannock reservation, and, on a limited basis, from several other locations in the southwest and Alaska.

INTRODUCTION

The purpose of this interagency-funded research project is to develop a comprehensive and high-quality database on the nutrient content of 150-200 traditional Native American foods. It has been initiated by the Nutrient Data Laboratory (NDL), ARS with funding from the National Institutes of Health Office of Research on Minority Health (ORMH) #00-OA-1235-038 and the Indian Health Service (IHS). The database will include mainstream foods, USDA commodity foods, indigenous native foods (hunted and foraged), and traditional native recipes. Many traditional indigenous foods are identified as major contributors of nutrients and highly consumed foods in the American Indian/Alaska Native diets, particularly among the elderly. Other traditional indigenous foods are currently not consumed in the amounts previously consumed but were important contributors of nutrients now deficient in native diets. Representative samples of these foods are procured and assayed for a wide array of critical nutrients and using state-of-the-art analytical methodology. Through this effort, tribal and public nutrition educators and health professionals will have the tool to educate and encourage the return to more traditional, healthier foods. The data will support research in the effort to overcome chronic diseases and health problems among members of the the American Indian population.

Figure 1. Geographic Stratification of Indian Tribes in Lower 48 States for 12 Strata

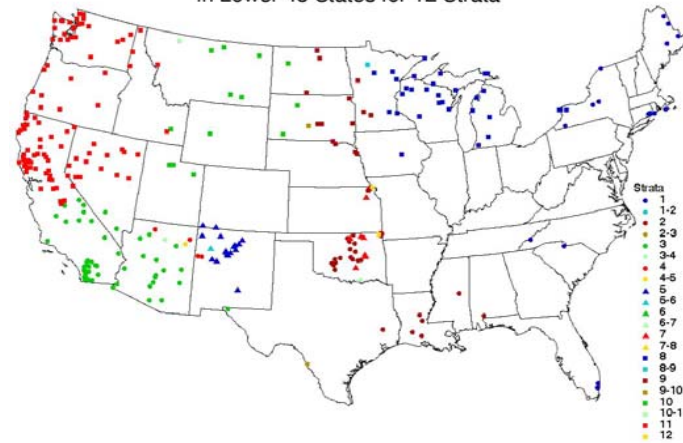


Table 1. Sample of Tribes by Stratum (12 Strata)

STRATUM	TRIBE NAME	ENROLLMENT
1	Cherokee Nation	200628
2	Caddo Tribe (OK)	3307
3	San Carlos Apache Tribe	10834
4	Western Navajo	40921
5	Fort Defiance Navajo	15326
6	Eastern Navajo	44435
7	Muskogee (Creek) Nation	44775
8	Sault Ste. Marie Tribe of Chippewa	27855
9	Standing Rock Sioux Tribe	12723
10	Cheyenne River Sioux Tribe	12703
11	Karuk Tribe (CA)	3835
12	Cherokee Nation	Second Sampling

METHODS

Establish a preliminary database and evaluate the state of existing data for traditional foods – Published nutrient data for traditional AIAN foods were reviewed for quality and documentation of tribe-specific information.

Identify and prioritize foods for sampling and analysis - Key traditional foods eaten by American Indians and Alaska Natives are identified through published data/government documents (e.g., Strong Heart Study, Navajo Health and Nutrition Survey), USDA and USDHHS surveys, IHS clinic surveys, and collaborations with other researchers (Utah State University, Diet and Human Performance Lab, ARS, USDA) and tribal health advocates and scientists. Most notably, a model elder-youth collaboration within the tribe was established on the Ft. Hall, Shoshone-Bannock Reservation to teach traditional ways in hunting, harvesting, and food preparation. Tribal members prioritize the traditional foods for reintroduction into the tribal diets, and work with the youth to relearn the preparation of these foods. In addition, a collaboration with several researchers in Alaska Native villages is evolving.

Design and implement a sampling plan for up to 200 foods(1) - A unique sampling frame for AIAN in the 48 contiguous states was designed by NDL and statisticians from the National Agricultural Statistical Service. The frame, based on tribal population densities and general grouping by growing regions, excludes from selection American Indians not associated with a tribe (i.e., those who live in cities). This was not seen as a serious limitation to the design because NDL targeted Indians who eat traditional foods as part of their regular diet. For the AI frame, separate samples were drawn for five group sizes or strata (6,12, 24, 35, and 48); depending on the level of sampling necessary to adequately represent the food. This also allows for different levels of sampling in tribes across the US (Figure 1, Table 1). Sample selection can be used in a regional area using the same approach. This frame was designed to provide a structured foundation for recruiting tribes in this study. However, some tribes may elect not to participate and some tribes not selected may wish to participate. This plan is considered flexible in that alternate tribes have been selected. NDL recognizes the need to respect tribe decisions and include tribes not in the list. "Mainstream" foods consumed by the AIAN population are already being analyzed as part of the existing National Food and Nutrient Analysis Program protocol.

Sample analysis – This includes use of current official analytical methods at labs qualified by the USDA approval process, a quality control process (SRMs, control composites, blind duplicates), and internal and external data reviews. Samples are individually prepared and analyzed at Food Analysis Lab Control Center, Virginia Polytechnic Institute for up to 100 nutrients, including proximates, vitamins and minerals, amino and fatty acids, cholesterol, carbohydrate fractions, carotenoids and newly emerging phytonutrients (e.g., flavonoids) in select foods.

Data dissemination – Data will be released in Standard Reference, www.nal.usda.gov/fnic/foodcomp and to the tribes, in support of tribe-initiated nutrition education and health programs.

Table 2. Foods Collected by Tribe

Tribe	# of Foods
Navajo	23
Alaska	6
Shoshone-Bannock	8
New Mexico	1
Yankton-Sioux	1
Total	39

RESULTS

As part of the larger study initiated by the Diet and Human Performance Lab, USDA, and Utah State University, 23 foods from the Navajo reservation, with locations in Arizona and New Mexico (Shiprock, Kayenta, and Gallup), were sampled and analyzed in 2000 (Table 2). Multiple samples were collected over 2-3 locations whenever possible, over several months, and for high consumption foods or foods that have ceremonial significance in the Navajo diet.

As part of the collaboration with the Ft. Hall Shoshone-Bannock tribe in Ft. Hall, ID, a total of 8 foods have been collected and prepared by tribe members and include elk, bison, steel-head trout and chokecherries. (Table 2) Youth were trained in sample handling and shipping to the lab and will be an integral part of this effort throughout continued food collections and preparation in 2003-2004.

More limited sampling under the pilot testing for shipping foods from remote regions includes 6 samples of wild fish consumed by Alaska natives. Through the collaborations with researchers in Alaska, high consumption foods have been identified through recalls and surveys; sampling and shipping protocols have established for these foods. One hundred and forty two Alaskan Native foods and their nutrients were also identified through literature sources.(Table 2) Agave (New Mexico) and dried corn (North Dakota) have also been collected and analyzed.

Plans are in place to sample 10-15 foods total from the San Carlos and White Mountain Apache in Arizona.

During 2003-04, up to 200 indigenous, subsistence foods and traditional prepared foods will continue to be sampled from the selected or alternate tribes, across tribes in the 48 conterminous states and Alaska. This will include an ongoing effort to establish working relationships with more selected tribes and researchers and identify foods for sampling and analysis. The AIAN Foods Database is being developed to also include previously published quality data and supportive information, as approved by the tribes. The sampling plan for subsistence foods consumed by Alaska Natives will be finalized.

References: 1) Perry, C.R., Becker, D.G., Bellow, M.E., Gregory, L.G., and Pehrsson, P.R. 2002. Alaska Native and American Indian Sampling Frame Construction and Sample Design for the National Food and Nutrient Analysis Program, 2001 Proceedings of the American Statistical Association, Section on Survey Research Methods [CD-Rom], Alexandria, VA: American Statistical Association.