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MANUAL OF FOOD PORTION QUANTIFICATION

SAINT KITTS AND NEVIS

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The development of the Saint Kitts and Nevis (SKN) Food Portion Quantification Manual was only possible through the collaboration of a large team of actors:

Sandra Patricia Crispim from the Federal University of Paraná (UFPR) led the entire process of the development of the Manual.

Latoya Matthew-Duncan and team from the Ministry of Health of SKN developed the food and recipe list and local arrangements.

Chef **Michael Henville** assisted with the development of the food list and cooking the foods, together with the kitchen assistants **Aileen Brookes** and **Jeanette Warner.**

Renell Daniel made local arrangements in Nevis.

The **Charlestown Primary School** in Nevis for provided the kitchen facilities and space for the photo shoot.

The photographer, **Ervin Weekes,** conducted the photo shoot.

Isabella Granderson from The University of the West Indies (UWI) assisted in the photo shoot.

André Sanches did the photo editing.

Laura Lotufo and **Joshu Morris** completed the layout of the Manual.

Denyse Johnston edited the Manual.

The Advisory Team (**Sa'eed Bawa, Safiya Beckford, U. Ruth Charrondiere, Isabella Granderson, Sharon Hutchinson, Fransen Jean, Marquitta Webb**) provided technical guidance.

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Marquitta Webb and **Sa'eed Bawa** contributed the "Tips When Using the Manual for Nutrition Education Purposes".

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BACKGROUND

In 2020, the Ministry of Health of Saint Kitts and Nevis (SKN), in collaboration with a National Task Force comprised of stakeholders from several government agencies, undertook the steps to carry out the first National Individual Food Consumption Survey in the country, using the 24-hour Dietary Recall Method. This survey was undertaken with the technical assistance of the Food and Agriculture Organization of the United Nations (FAO), the St. Augustine Campus of The University of the West Indies (UWI) in Trinidad and Tobago, and the Federal University of Paraná (UFPR) in Brazil.

After considering several options of quantification aids, the decision was taken to develop a photo book, which is known to assist respondents in accurately quantifying food portion size (Nelson and Darbyshire, 1994).

OBJECTIVE AND RESULT

The Manual of Food Portion Quantification; Saint Kitts and Nevis was developed to assist individuals in recognizing and reporting their food and beverage intakes accurately during the National Individual Food Consumption Survey in SKN. The Manual is to be used along with the 24-hour Dietary Recall Method, which is designed to assess the food consumption of individuals aged 18 to 65 years old. Additionally, is it hoped that this Manual could be used in nutrition education programs to demonstrate the importance of adequate portion sizes in obesity control and the prevention, waste minimization and management of food cost. The Manual would also be a useful guide for ordering and preparing food and meeting nutrition needs of the population of SKN, as well as the citizens of the other Caribbean countries.

The Manual includes 121 photos of single foods and recipes, as well as household measurements (e.g. cups, spoons), of which 85 were taken in SKN and 36 were taken in Brazil. All photos were taken using a similar methodology. The photos cover the measurement of most food groups, either by photos of portions or of household measurements. The weight of every portion in each photo and the volume of all utensils were recorded and are available at the end of the Manual.

METHODOLOGICAL PROCEDURES FOR PREPARING THE MANUAL

The photos of foods and household measurements included in the Manual were developed in a stepwise process.

Initially, the National Task Force group created a list of single foods consumed in SKN. Then, the list was improved by UWI, UFPR and FAO. The final list included the 225 most consumed foods, including 25 composite dishes, which were evaluated for their inclusion into the Manual according to the recommendations from the International Agency for Research on Cancer (IARC) Guidelines (Crispim, Nicholas et al., 2014) for quantifying a food with photos.

The selection criteria for creating the series of portions with photos is based on the ability of respondents to estimate the amount of the particular food consumed. As the accurate

quantification of amorphous foods (such as pasta and mashed potatoes) and/or foods served in non-uniform pieces (such as meats) is rather difficult, they are normally represented in a series of photos of different portion sizes. On the other hand, foods that can be easily measured by other types of quantification methods, such as standard units (e.g. a can of soda), are not included in the photo book. However, some photos of household measurements (e.g. glasses) were included to facilitate the identification of the size and shape of the household measurements as well as possible fractions. Food portion standards were also included to assist in the identification of the correct food type (e.g. type of apples) or the size of the food (e.g. coconut dumplings in small, medium, and large units).

Most foods featured in the Manual are represented in four and six portion photos, which is recognized as a means of diminishing the risk that respondents will choose the middle portion. Exceptions were made with the string beans photos, one of which was lost during the procedure, and the photos of food types, which do not always require a wide range of options.

The portion sizes were chosen to represent the smallest to the biggest amounts consumed, while assuring that each portion was sufficiently visually different from the others. The differences between portion sizes were food-specific and defined based on the identification of smallest and largest possible amounts. Only after that, were the in-between portions defined. The edible weights of each food or recipe portion were recorded during the photo shoot, with the exception of photos of grapes and apples, for which an edible portion conversion factor was applied to their amounts to arrive at the indicated edible portion weights.

See the "How to use section" for more practical information.

HOW TO USE THE MANUAL

TARGET GROUP

The Manual was originally designed as a printed quantification aid to be used for the National Individual Food Consumption Survey in Saint Kitts and Nevis, which was carried out from 2020 to 2021 by enumerators. Therefore, this photo book can also be used as a quantification aid in dietary assessment to assist individuals in quantifying their food and beverage intakes more accurately. Another target group is related to nutrition education. The Manual can be used by nutrition educators to teach individuals about portion size and control for healthy eating and, in turn, the management of obesity and other lifestyle diseases.

USAGE IN DIETARY SOFTWARE AND OTHER INSTRUMENTS

The Manual comprises three sections for quantification:

1. Household measurements (HHM) – classified by type of HHM.

2. Food portion photos – photographs of foods and recipes with their portions, classified into food groups, each with four to six portions.

3. Food portion standards – for distinct units of foods to distinguish the size and type of the unit, with two to six photos per food, usually with different units on one plate.

For easy referencing, each photo has been assigned a code that can be entered into the appropriate category of the dietary tool for data collection, which can be paper based or computerized. In the latter case, the photo codes with the corresponding weight would have to be integrated into the quantification part of the software/application for the foods for which the photo is deemed useful.

In the National Individual Food Consumption Survey in Saint Kitts and Nevis, the photos with their codes and weights were incorporated into the Caribbean version of the 24-hr-recall collection software myfood24®. The photo codes of the different portions in the Manual appeared on the screen during the interview and, depending on the software, the photos of the different portions would also be shown. The volumes of the different fractions of the HHM and the grams of each food portion and food unit can also be found in the section "Technical Specifications of Photos" (p 111-114). This information can be searched with the food code, which is listed in sequence from the smallest to the largest. In relation to the food amounts measured with a "Kitchen skimmer" (M034), this will be estimated using an external source, which will vary according to the food type.

THE USE OF HOUSEHOLD MEASUREMENTS (HHM) AND RULER

The photos of each household measurement (HHM) has a corresponding code starting with the letter M and a three-digit number, a name, dimensions, and fractions if applicable (e.g. M001; Glass, type 1; height 10.2 cm; fractions ¼, ½, ¾, ⅞ and 1). As the photos do not represent the

actual sizes of the HHM, the major dimensions for each was added on the photo in centimetres. To facilitate the identification of the correct HHM used, a ruler was placed on every page with photos of HHMs.

The ruler is to scale and measures from 0 to 24 cm. Fractions have been added to those HHMs for which significantly different portions can be ingested, so as to be more accurate about the actual quantity consumed (e.g. M001 has the following fractions: ¼, ½, ¾, ⅞ and 1).

During the interview, to ensure that the HMM are used appropriately, a three-step approach should be followed:

- Firstly, the enumerator should identify the correct HHM photo with the participant, using the different shapes of HHMs.

- Secondly, it should be confirmed that the HHM choice is consistent with the indicated dimensions or it should be changed if the dimensions do not correspond to the HHM originally chosen.

- In the third step, the fraction should be determined using the photos. It might be helpful to indicate the fractions using fingers, e.g. with M001, the ½ fraction should be around 5 cm or five fingers from the top.

Enumerators should be aware that there could be a discrepancy between common language and fractions. For example, when participants report a full glass, the enumerator should probe if this corresponds to the fraction ¾, ⅞ or 1, even though 1 is highly unlikely. The enumerator then enters the code with the fraction into the survey software or form.

THE USE OF FOOD PORTION PHOTOS

All food photos are presented in their food group, which should facilitate the fast and easy use of the Manual. The food groups are:

1. Cereals and their products
2. Roots, tubers, plantains and their products
3. Pulses, seeds, nuts and their products
4. Fish, shellfish and their products
5. Meat and their products
6. Vegetables and their products
7. Fruits and their products
8. Composite dishes

Each food has a code comprised of the letter P and a three-digit number (e.g. P001 Cake, dark fruit). There are between three and six photos for each food (e.g. P001-1 is the smallest portion going up to P001-6, which is the biggest portion), which are ordered by increasing weight and by taking care that the variation in portion size is clearly differentiated. To facilitate the identification of the consumed portion sizes, the photos were taken from the same angle, on the same plate and with the same fork, knife or spoon. The actual size of the plate in the photos is 26 cm in diameter and a printed replica can be found inside the back cover of the manual. This should be presented to the participant at the beginning of the quantification. In cases where the food may be consumed on a smaller plate (e.g. cucumber) or in a specific bowl or soup plate (e.g. soups), these were placed on top of the actual plate and photographed together.

During the interview, the enumerator should show the food photos in the Manual (or on screen) and the participant asked to choose the most adequate portion photo. The enumerator would then confirm if the whole portion was eaten or a fraction of it. For example, if the whole portion was eaten, this would be indicated by 1. If it was half, this would be indicated by 0.5, and so on. The

enumerator then enters the code of the portion with the fraction into the survey software or form.

THE USE OF FOOD PORTION STANDARDS

The foods are presented in alphabetical order and each has a code comprised of the letter P and a three-digit number (e.g. P072-1 Apple, types). Some of the photos also have a letter placed next to the food unit to indicate a specific food type. For example, there are eight possibilities for P076-1, Candy, types, ranging from a to h, where candy type 1a (green long) is 9.1 g and 1d (gummy bear) is 5 g.

During the interview, the enumerator and participant will use these photos in a similar way as instructed in the previous food portion photos, with the extra task of identifying the letter of the food unit, if that is the case (i.e. P074 Biscuit types; P076 Candy types; P077 Chocolate types; P079 Chicken parts).

USING A PHOTO WITH DIFFERENT FOODS

Some photos can be used for several foods, provided their densities are similar between the foods. In case of significantly different densities between the foods, the following formula can be applied to calculate the corresponding weight of the other food:

weight (in grams) of other food = (weight of original food in the photo x density of other food)/density of original food

When household measurements are used, the weight of the food is calculated using the formula:

weight (in grams) of food = food volume (in mL) x density of food

The FAO/INFOODS Density Database (Charrondier, Haytowitz and Stadlmayr, 2012) could be used to find densities of food and beverages.

TIPS WHEN USING THE MANUAL IN DIETARY ASSESSMENT SURVEYS

◊ Enumerators are advised to familiarize themselves with the Manual and the photos before the survey, so that they can easily locate the correct page in the Manual during the interview or, for new foods, indicate which photo would be adequate for its portion quantification. This is important, as the Manual includes 85 household measurements (e.g. cups, spoons) and 121 photos of single foods and recipes, which were classified by food groups. As it might not be obvious for some enumerators to know which food belongs to a certain food group, especially those with limited nutritional knowledge, familiarization with the Manual before interviews is key.

◊ Not all foods have a correspondent photo in the Manual. A selection was made of the foods that are most commonly consumed and for which it is difficult to estimate the quantity with other types of measurements. For example, pancakes can be easily identified by units and therefore do not appear in a photo.

◊ The Manual should be handled by the enumerator to facilitate the data collection. However, participants should actively participate in the identification of photos and portion sizes. Therefore, the interview should be carried out in a position where the enumerator can easily show the participant the Manual while keeping control of what is shown.

The more familiar the enumerator is with the Food Portion Quantification Manual, the easier it will be to identify the photos of food portions and utensils.

◊ It might be useful to place stickers at the beginning of the sections of the HHM, each food group, and food unit. Enumerators are advised to use the codes for HHM and portions with their fractions, instead of entering the weights of the portions or the volume of the HHM directly onto the collection software or form. If g or mL are entered directly, this will not provide the choice behind the quantification, which may be of interest and important to assess the quality of the data. Volumes and weights have been included for information and to facilitate their entries into the dietary collection software, but should not to be used during the interview. In addition, looking at the weights and fraction volumes during the interview may delay the interview and can negatively interfere with the choice of portion by the participant. In the case of the Caribbean version of myfood24®, grams and volumes have already been inputted into the application.

TIPS WHEN USING THE MANUAL FOR NUTRITION EDUCATION PURPOSES

◊ The Manual can be used for portion control in the prevention and management of chronic diseases, as well as to help teach individuals to overcome poor eating habits. The visual images provide a mental picture of what is consumed and hence can stimulate interest in foods and eating habits, while increasing dietary knowledge and conscience of portion sizes and their consequences on nutrition and health.

◊ During nutrition education and counselling session, show the food photos in the Manual to the client to assess what is usually consumed and ask the individual to choose the most adequate portion photo that represents the consumption at home and/or out-of-home (e.g. restaurants). Then discuss with the client the weight of the selected portion size and, if possible, the associated energy and nutrient contents of each portion, which was calculated using an appropriate food composition table for the described foods and weight. Put the energy and nutrient intakes in relation to the person´s requirement and indicate what the consumption of a smaller portion would entail for their energy and nutrient intakes, body weight and health. The counsellor could also propose other foods with less energy but higher micronutrient contents, together with the appropriate serving size, based on the client's needs.

◊ Using the photo or plate as a portion guide, persons can distinguish the correct portion to consume. Note that some photos with very large portion sizes were included because those amounts of a given food are consumed by individuals. The aim of nutrition education could be that the persons understand the impact of these big portion sizes on their nutrition and health and are motivated to consume one of the smaller portion sizes of the food or even to select healthier foods also with adequate portion sizes.

PHOTOGRAPHS

HOUSEHOLD MEASUREMENTS

FOOD PORTIONS

CEREALS AND THEIR PRODUCTS

ROOTS, TUBERS, PLANTAINS AND THEIR PRODUCTS

PULSES, SEEDS AND NUTS AND THEIR PRODUCTS

FISH, SHELLFISH AND THEIR PRODUCTS

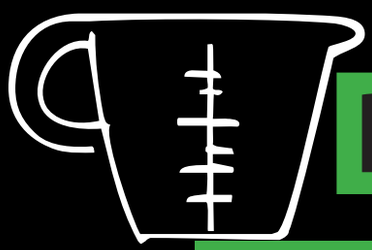
MEAT AND THEIR PRODUCTS

VEGETABLES AND THEIR PRODUCTS

FRUIT AND THEIR PRODUCTS

COMPOSITE DISHES

FOOD PORTION UNITS



PHOTOS: HOUSEHOLD MEASUREMENTS

M001
Glass, type 1

M002
Glass, type 2

M003
Glass, type 3

M004
Glass, type 4

M005
Glass, wine type

M006
Glass, champagne type

Photos: © André Sanches

M007

Glass, type 5

M008

Mug, small

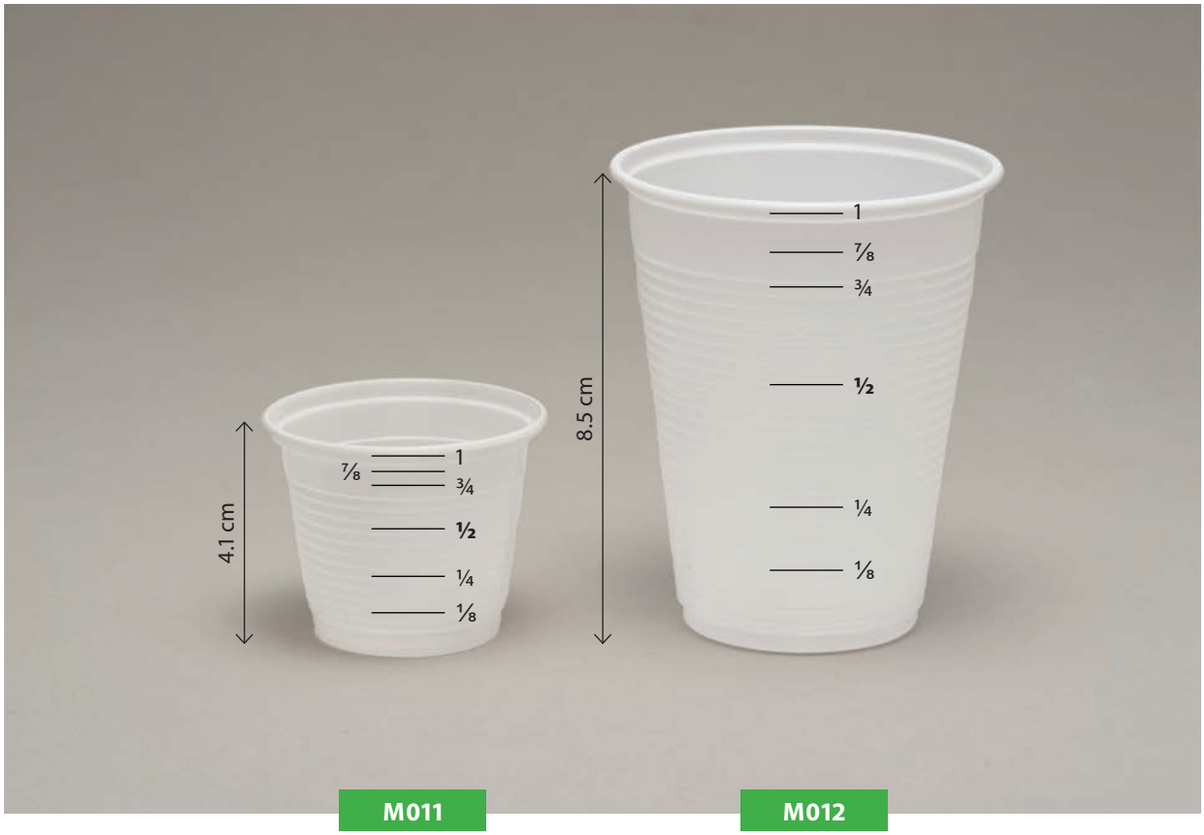
M009

Mug, medium

M010

Mug, large

Photos: © André Sanches



M011
Disposable cup, very small

M012
Disposable cup, small

M013
Disposable cup, styrofoam

M014
Disposable cup, medium

M015
Disposable cup, large

M016
Bowl, small

M017
Bowl, medium

M018
Bowl, large

M019
Food packaging, styrofoam 1

Photos: © André Sanches

M020

Food packaging, styrofoam 2

M021

Food packaging, styrofoam 3

M022

Food packaging, styrofoam 4

Food packaging, styrofoam 5

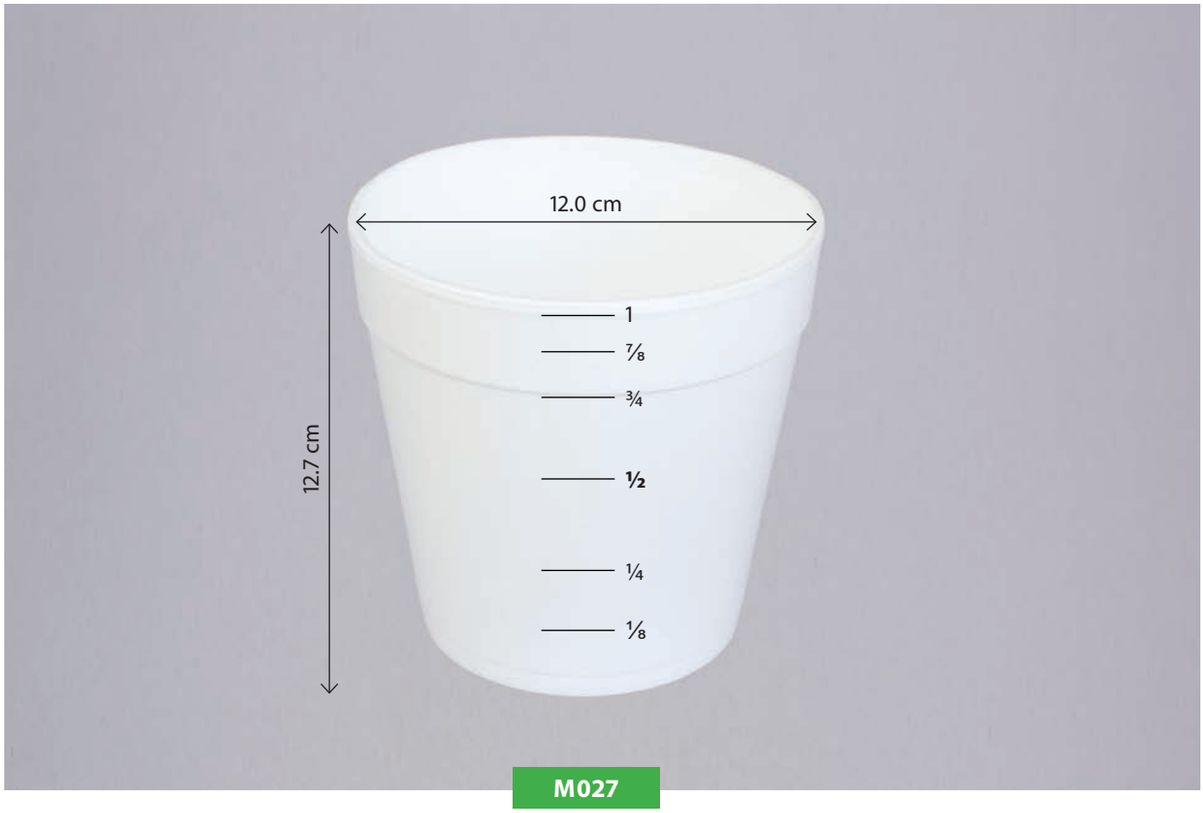
Photos: © André Sanches

M025

Soup packaging, styrofoam 1

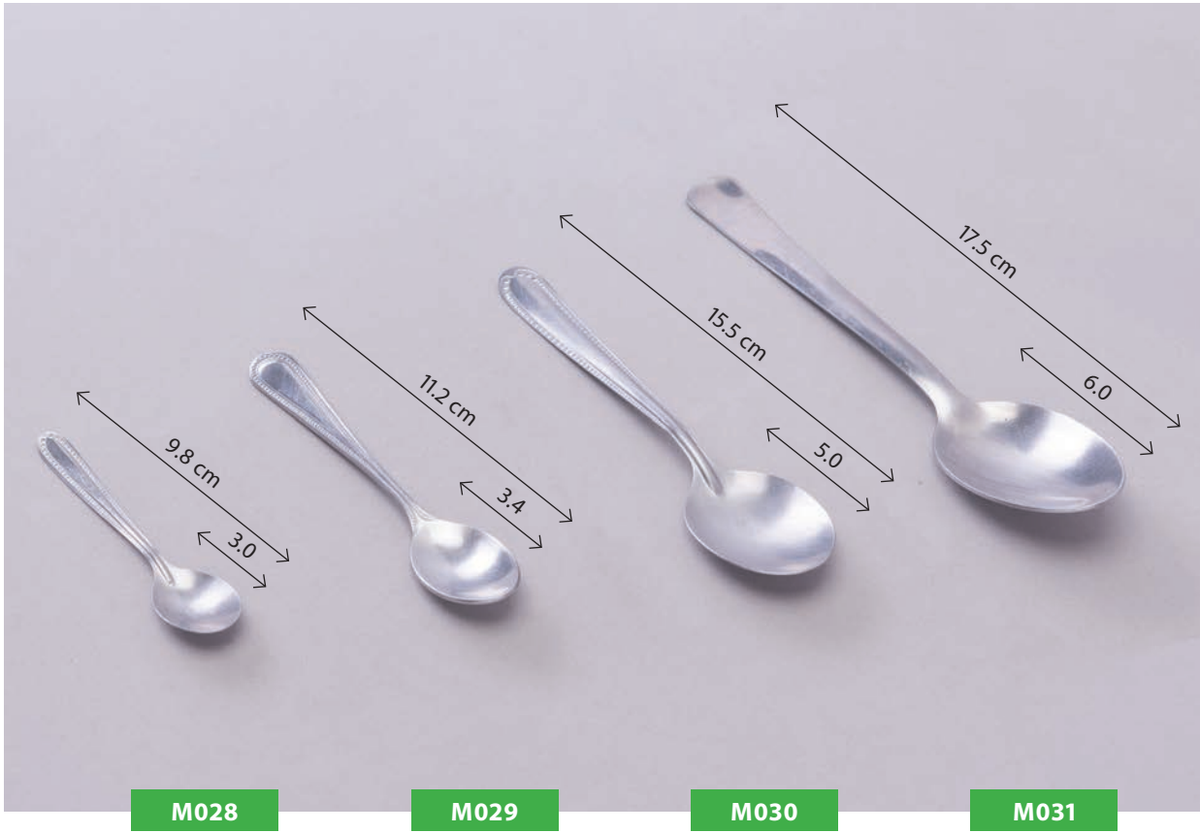
M026

Soup packaging, styrofoam 2



M027

Soup packaging, styrofoam 3



M028
Spoon, type 1

M029
Spoon, type 2

M030
Spoon, type 3

M031
Spoon, type 4

M032
Serving spoon, type 1

Photos: © André Sanches

M033

Serving spoon, type 2

M034

Kitchen skimmer

Photos: © André Sanches

M035

Ladle, small

M036

Ladle, medium

Photos: © André Sanches

M037

Ladle, large

PHOTOS: FOOD PORTIONS

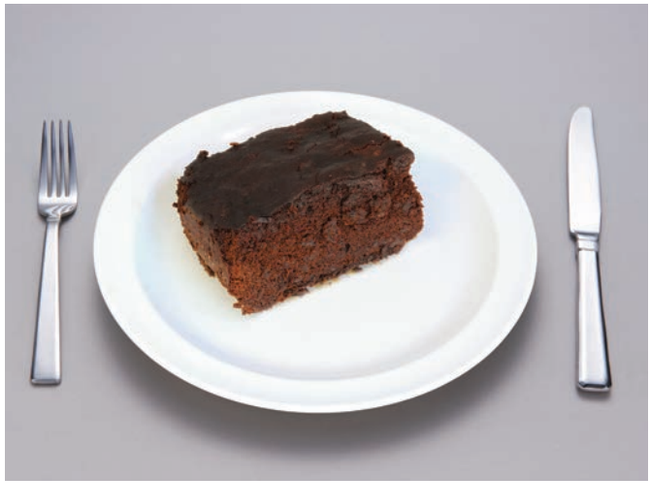
P001 CAKE, DARK FRUIT

P001 – **1**

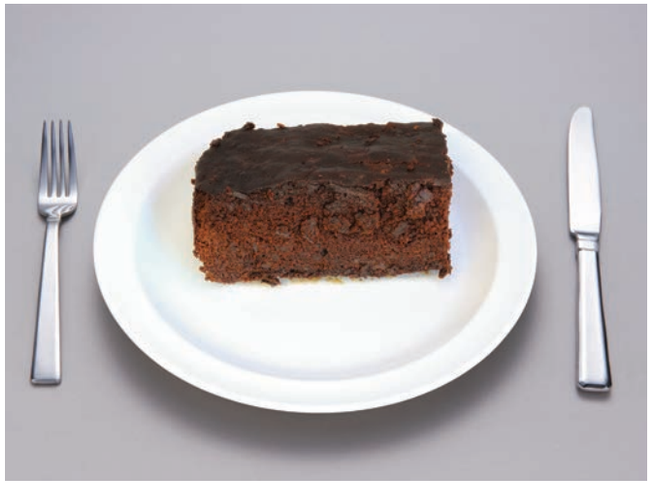
P001 – **2**

P001 – **3**

P001 – **4**



P001 – **5**



P001 – **6**

P002 CORNFLAKES WITH MILK

P002 – **1**

P002 – **2**

P002 – **3**

P002 – **4**

P003 CREAM OF WHEAT

P003 – **1**

P003 – **2**

P003 – **3**

P003 – **4**

P004 OATMEAL PORRIDGE

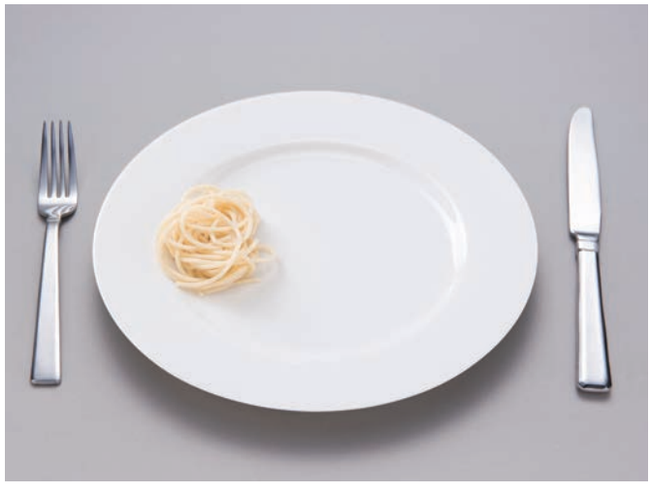
P004 – **1**

P004 – **2**

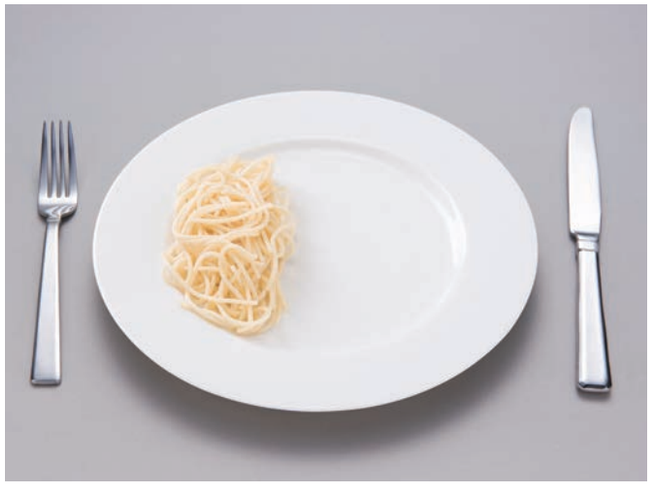
P004 – **3**

P004 – **4**

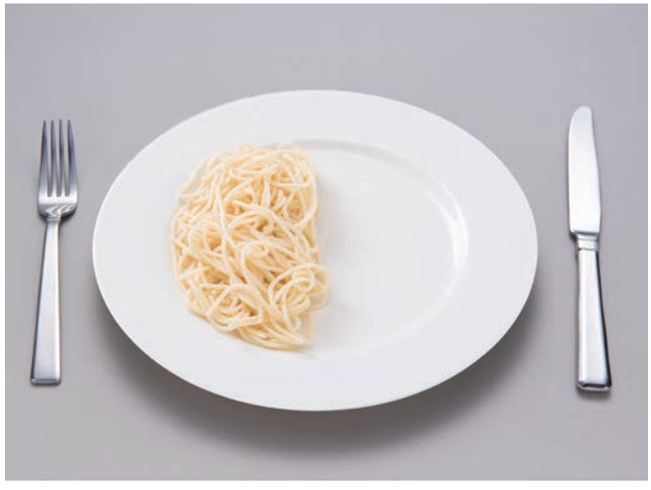
P005 PASTA, SPAGHETTI TYPE, COOKED



P005 – **1**

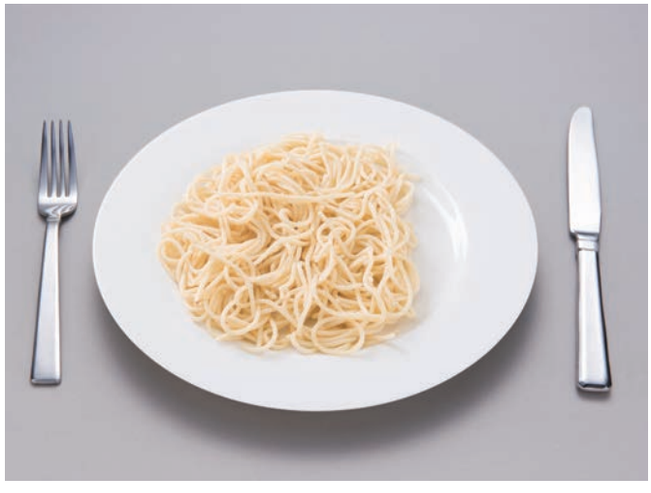


P005 – **2**

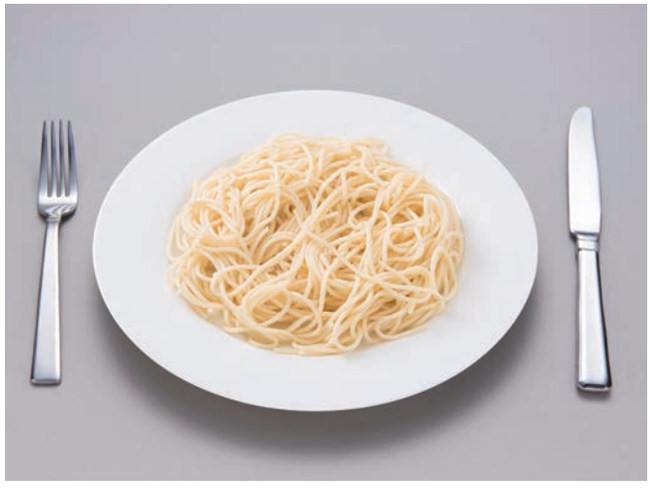


P005 – **3**

P005 – **4**



P005 – **5**



P005 – **6**

P006 POPCORN

P006 – **1**

P006 – **2**

P006 – **3**

P006 – **4**

P006 – **5**

P007 RICE, COOKED

P007 – **1**

P007 – **2**

P007 – **3**

P007 – **4**

P007 – **5**

P007 – **6**

P008 BREAD WITH CHEESE

P008 – **1**

P008 – **2**

P008 – **3**

P008 – **4**

P009 TURN CORN / FUNGI, BOWL

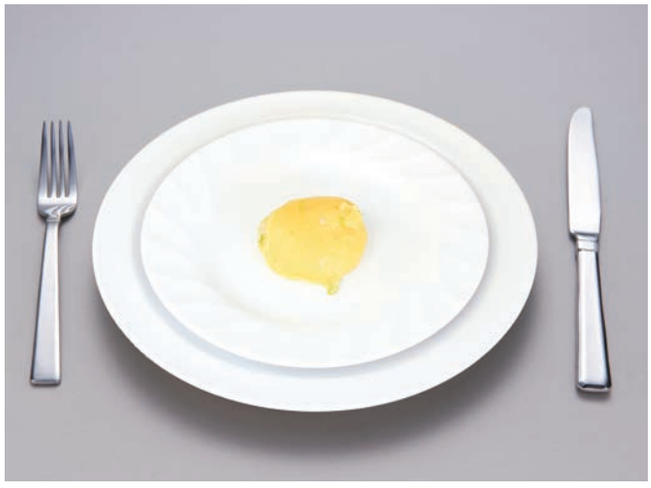
P009 – **1**

P009 – **2**

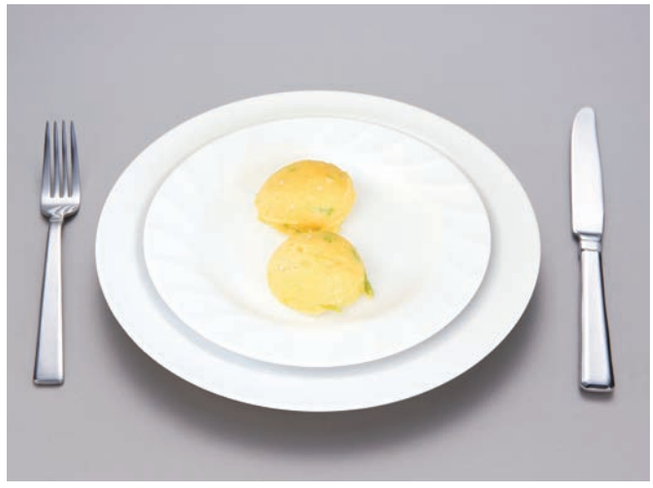
P009 – **3**

P009 – **4**

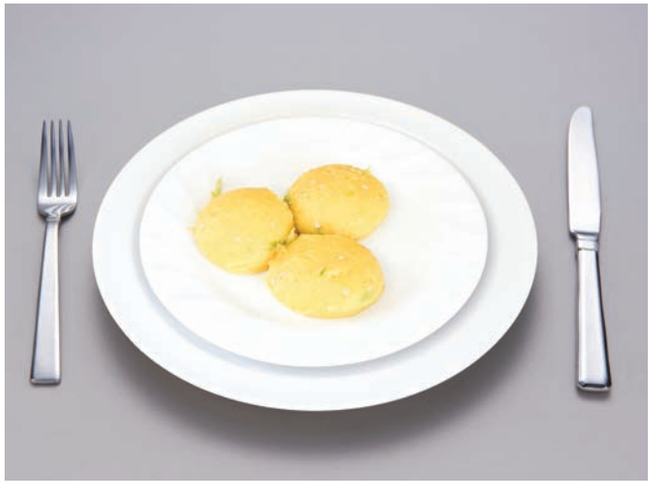
P010 TURN CORN / FUNGI, PLATE



P010 – **1**



P010 – **2**



P010 – **3**

P010 – **4**

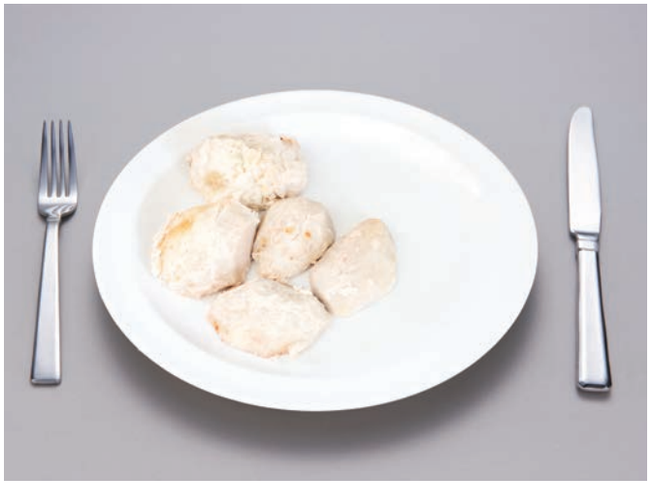
P011 DASHEEN, COOKED

P011 – **1**

P011 – **2**

P011 – **3**

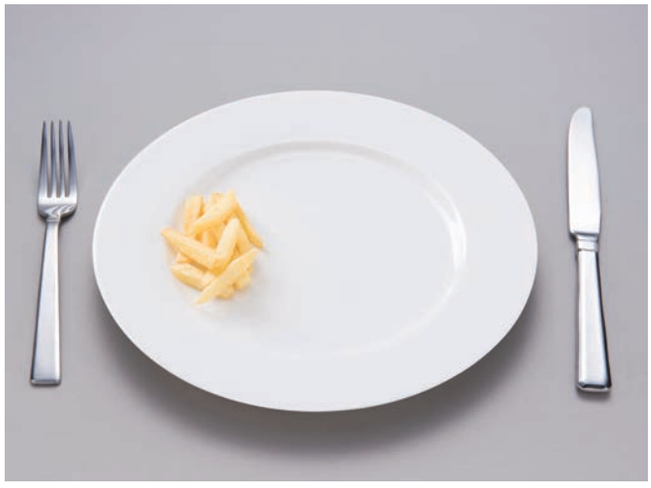
P011 – **4**



P011 – **5**

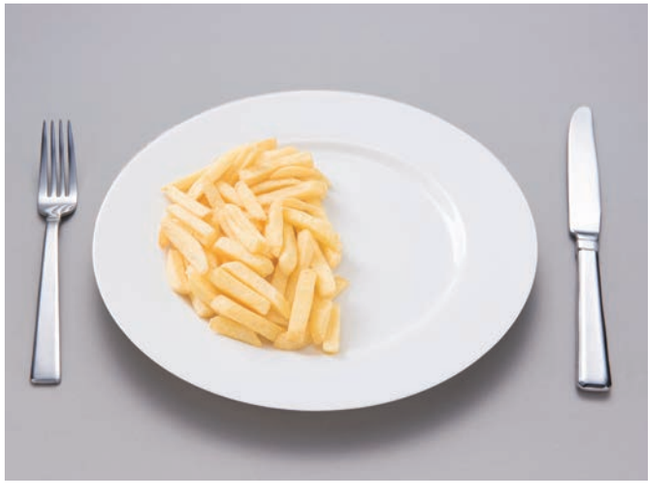
P011 – **6**

P012 FRENCH FRIES



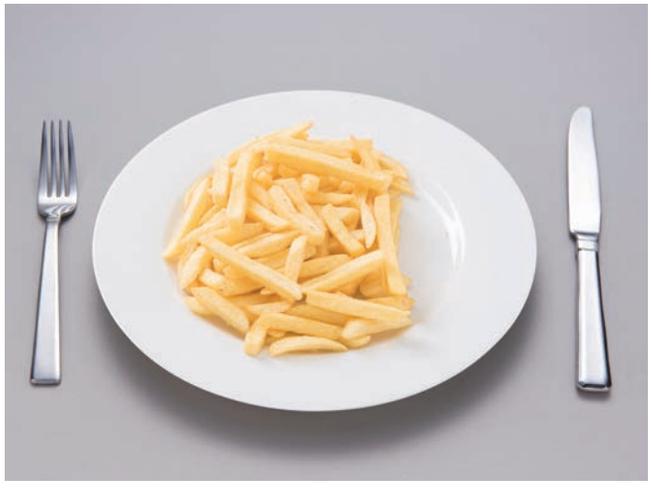
P012 – **1**

P012 – **2**



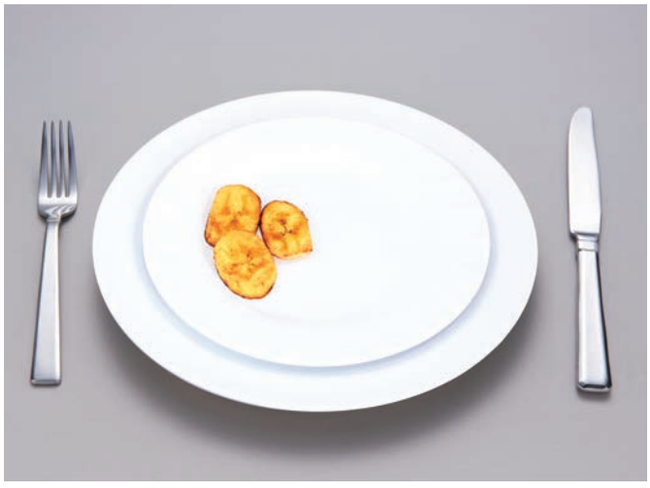
P012 – **3**

P012 – **4**

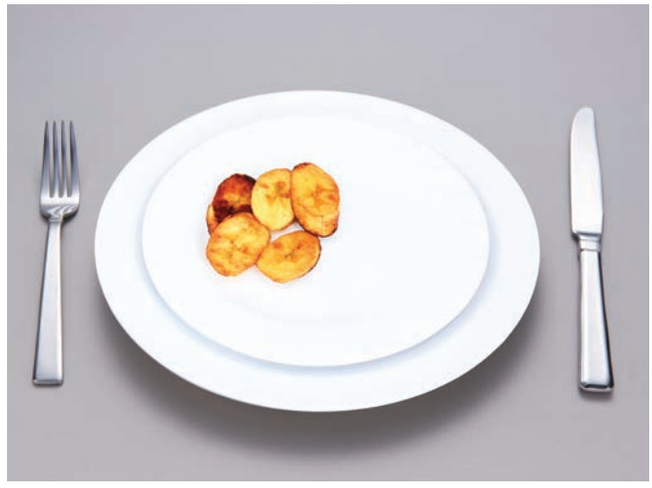


P012 – **5**

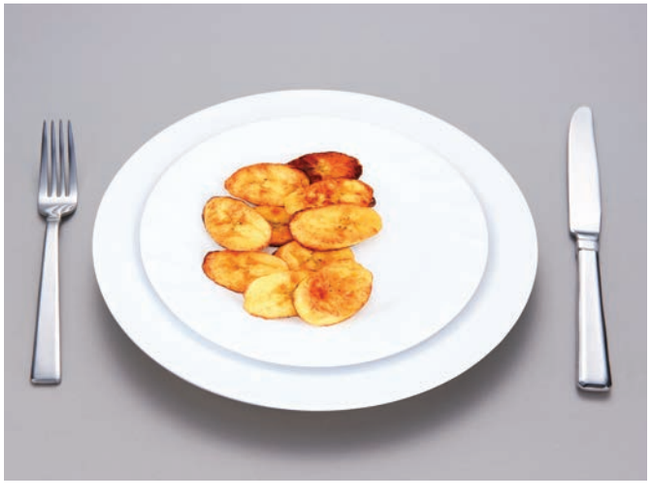
P013 FRIED PLANTAIN



P013 – **1**



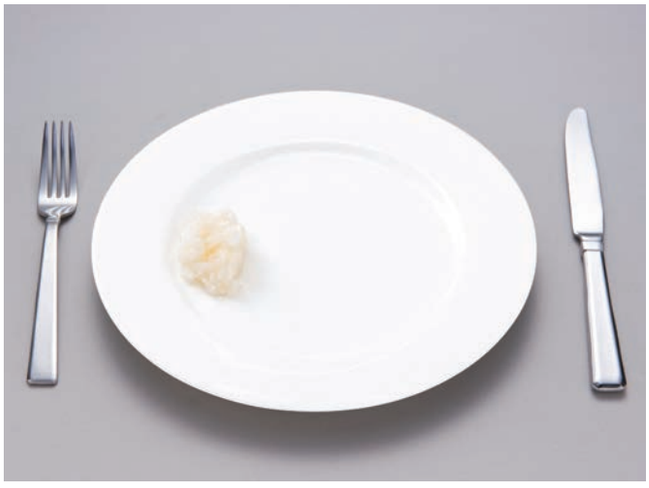
P013 – **2**



P013 – **3**

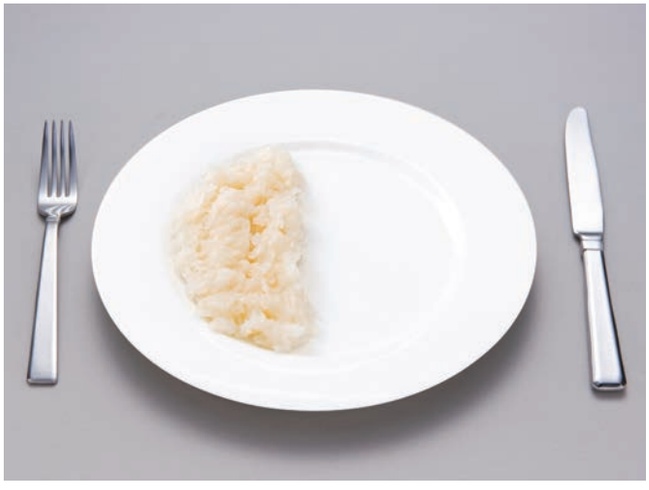
P013 – **4**

P014 MASHED POTATO

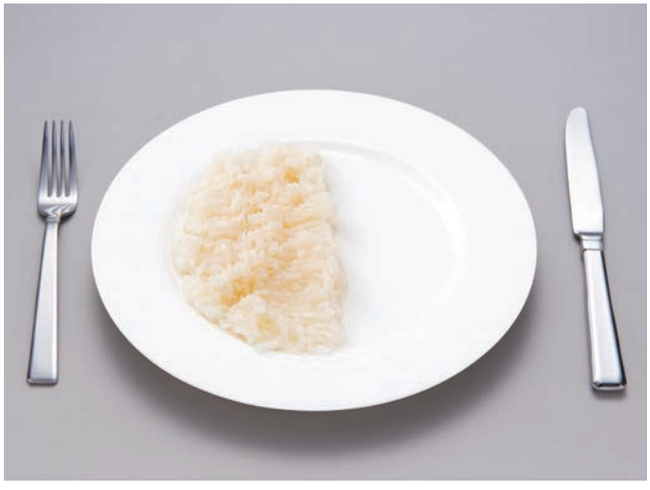


P014 – **1**

P014 – **2**



P014 – **3**



P014 – **4**

P014 – **5**

P014 – **6**

P015 POTATO SALAD

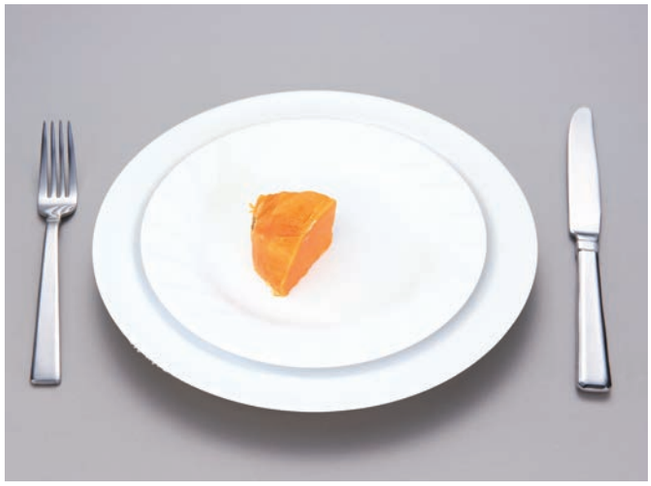
P015 – **1**

P015 – **2**

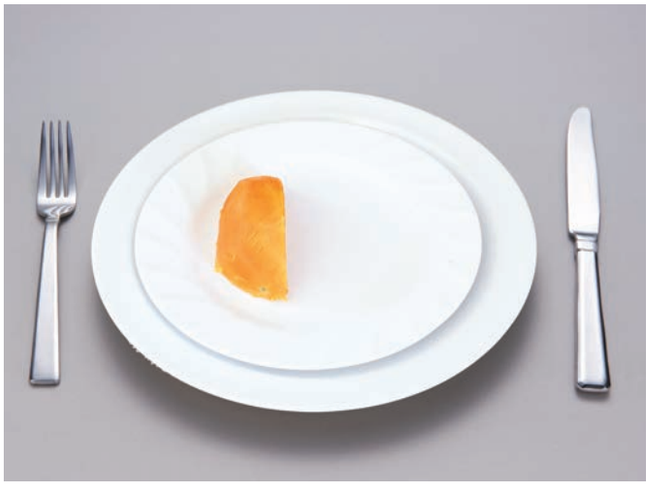
P015 – **3**

P015 – **4**

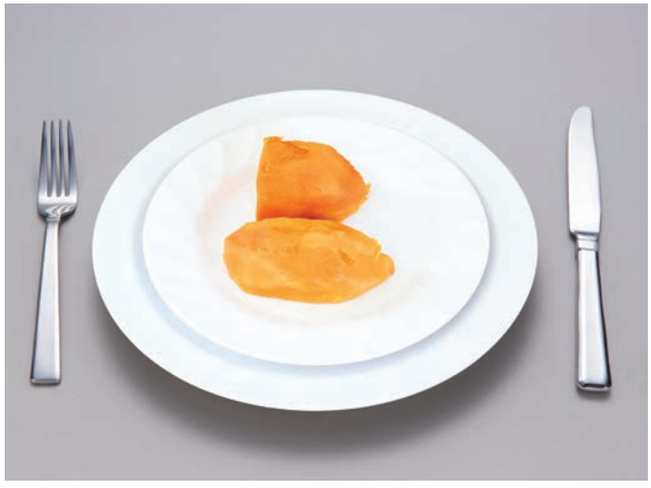
P016 SWEET POTATO, COOKED



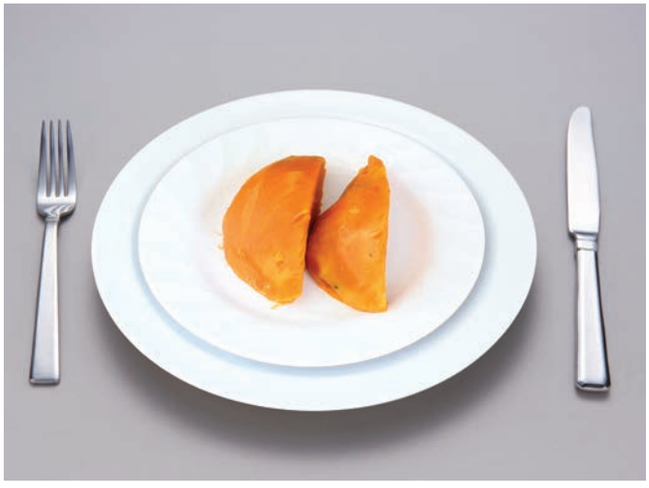
P016 – **1**



P016 – **2**



P016 – **3**



P016 – **4**

P017 YAM, COOKED

P017 – **1**

P017 – **2**

P017 – **3**

P017 – **4**

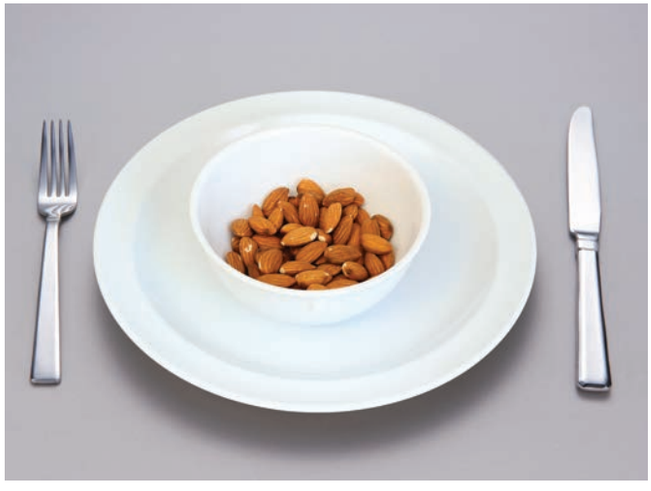
P017 – **5**

P017 – **6**

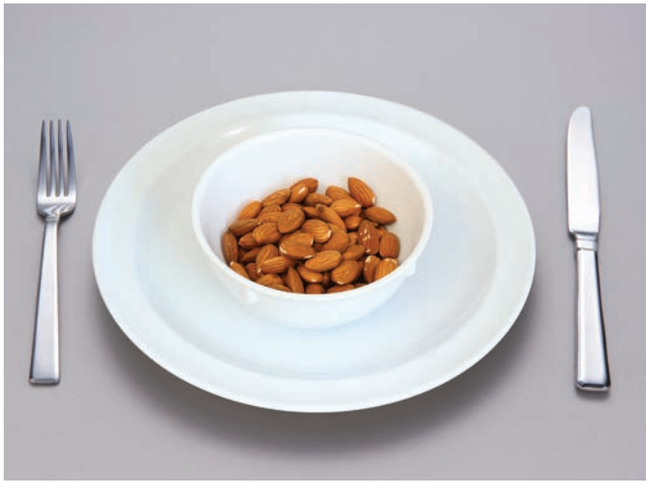
P018 ALMONDS

P018 – **1**

P018 – **2**



P018 – **3**



P018 – **4**

P019 LENTILS, COOKED

P019 – **1**

P019 – **2**

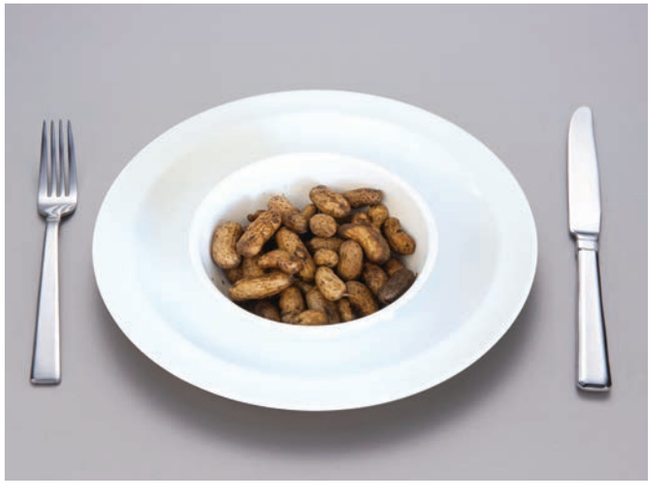
P019 – **3**

P019 – **4**

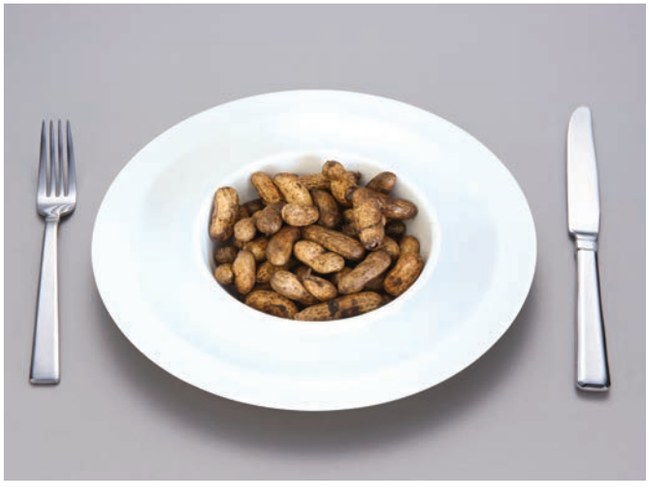
P020 PEANUTS, BOILED

P020 – **1**

P020 – **2**



P020 – **3**



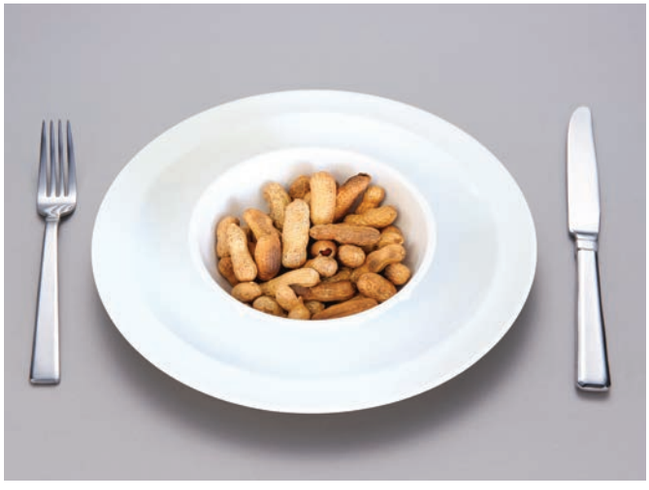
P020 – **4**

Photos: © Ervin Weekes

P021 PEANUTS, DRY

P021 – **1**

P021 – **2**



P021 – **3**

P021 – **4**

P022 PIGEON PEAS, COOKED

P022 – **1**

P022 – **2**

P022 – **3**

P022 – **4**

P023 RED BEANS, COOKED

P023 – **1**

P023 – **2**

P023 – **3**

P023 – **4**

P025 CONCH CHOWDER

P025 – **1**

P025 – **2**

P025 – **3**

P025 – **4**

P025 – **5**

P026 CARIBBEAN FISH SOUP

P026 – **1**

P026 – **2**

P026 – **3**

P026 – **4**

P027 CONCH WATER

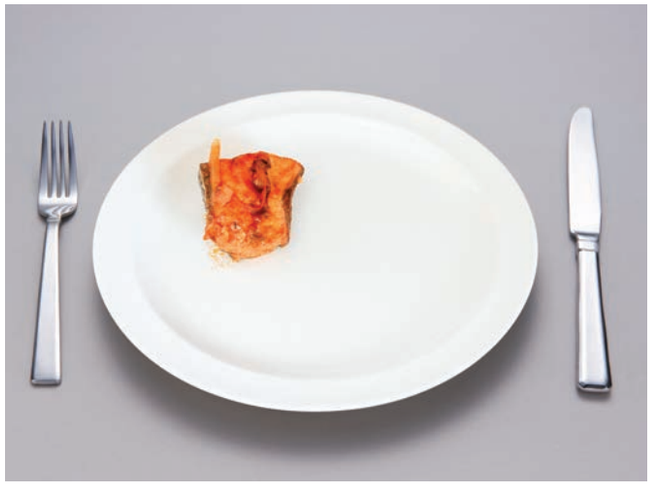
P027 – **1**

P027 – **2**

P027 – **3**

P027 – **4**

P028 CREOLE POACHED FISH



P028 – **1**

P028 – **2**

P028 – **3**

P028 – **4**

P028 – **5**

P028 – **6**

P029 FISH IN WHITE SAUCE

P029 – **1**

P029 – **2**

P029 – **3**

P029 – **4**

P030 – **1**

P030 – **2**

P030 – **3**

P030 – **4**

P030 – **5**

P030 – **6**

P031 SHRIMP WITH SKIN, COOKED

P031 – **1**

P031 – **2**

P031 – **3**

P031 – **4**

P031 – **5**

P031 – **6**

Photos: © André Sanches

P032 SHRIMP WITHOUT SKIN, COOKED

P032 – **1**

P032 – **2**

P032 – **3**

P032 – **4**

P032 – **5**

P032 – **6**

P033 STEAMED FISH WITH SAUCE

P033 – **1**

P033 – **2**

P033 – **3**

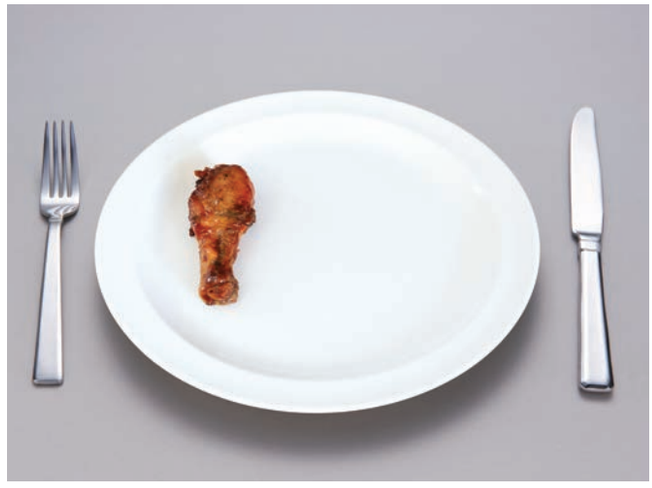
P033 – **4**

P033 – **5**

Photos: © Ervin Weekes

P034 BARBECUED CHICKEN

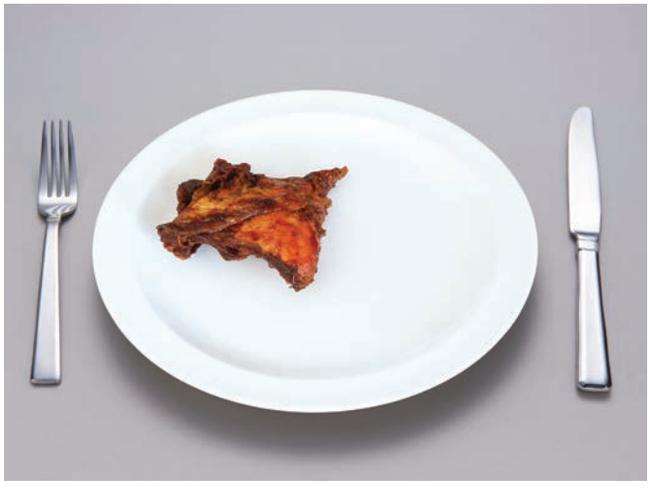
P034 – **1**



P034 – **2**

P034 – **3**

P034 – **4**

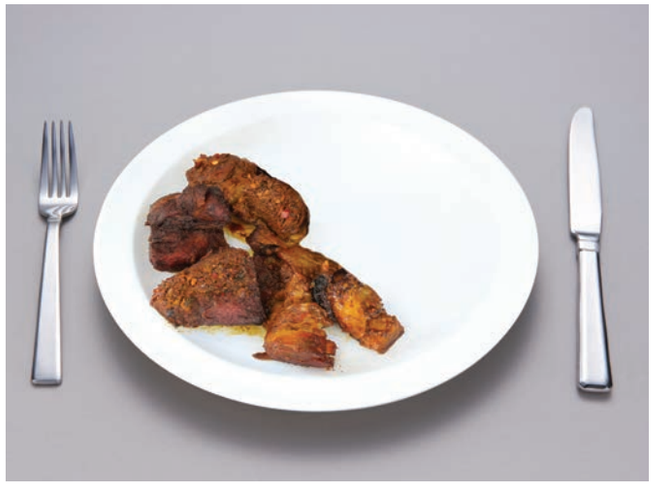


P034 – **5**

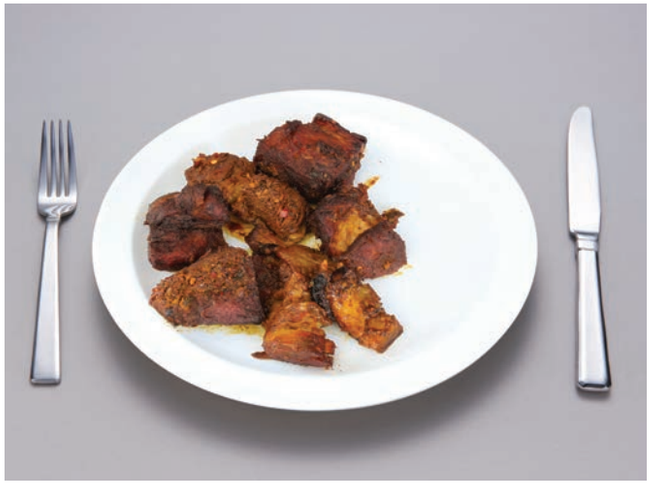
P034 – **6**

P024 BARBECUED PORK

P024 – **1**

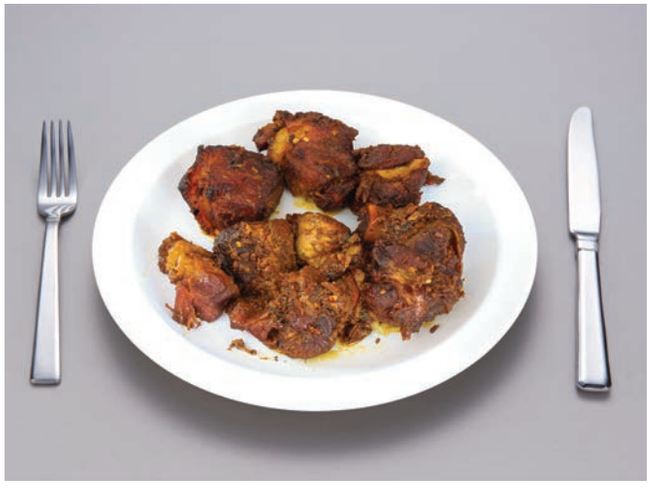


P024 – **2**



P024 – **3**

P024 – **4**



P024 – **5**

Photos: © Ervin Weekes

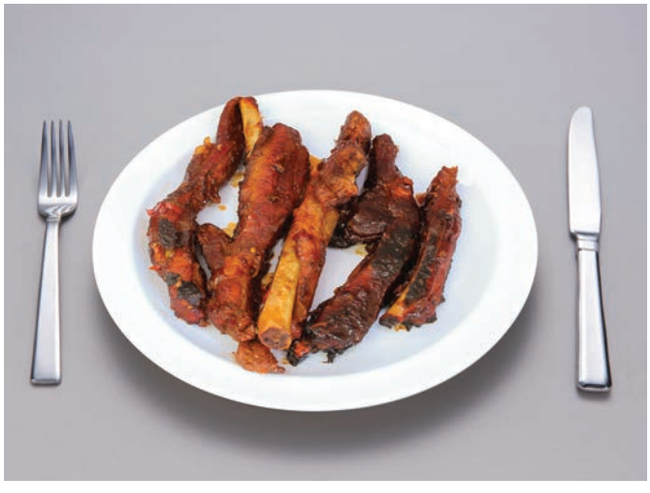
P035 BARBECUED RIBS

P035 – **1**

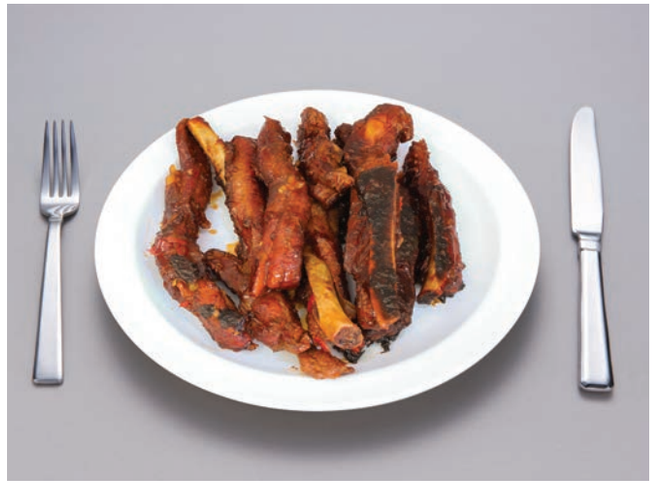
P035 – **2**

P035 – **3**

P035 – **4**



P035 – **5**



P035 – **6**

P036 STEWED CHICKEN

P036 – **1**

P036 – **2**

P036 – **3**

P036 – **4**

P036 – **5**

P036 – **6**

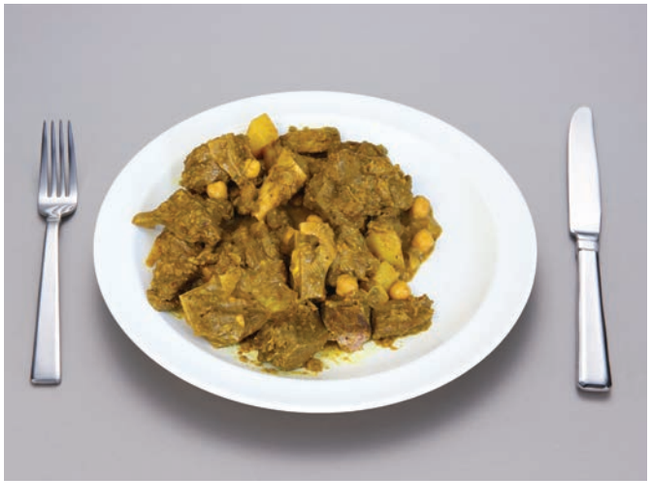
P037 STEWED MUTTON

P037 – **1**

P037 – **2**

P037 – **3**

P037 – **4**



P037 – **5**

P037 – **6**

P038 GOAT WATER

P038 – **1**

P038 – **2**

P038 – **3**

P038 – **4**

P038 – **5**

P039 LIVER, FRIED

P039 – **1**

P039 – **2**

P039 – **3**

P039 – **4**

P039 – **5**

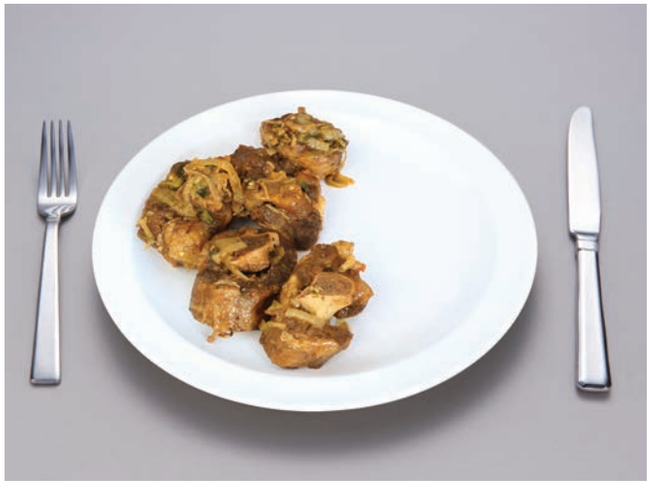
P040 OXTAIL, COOKED

P040 – **1**

P040 – **2**

P040 – **3**

P040 – **4**



P040 – **5**

Photos: © Ervin Weekes

P041 PIG FOOT SOUP

P041 – **1**

P041 – **2**

P041 – **3**

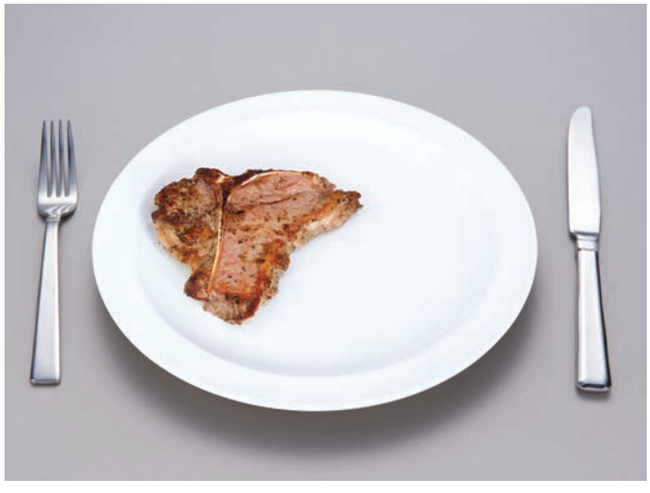
P041 – **4**

P042 – **1**

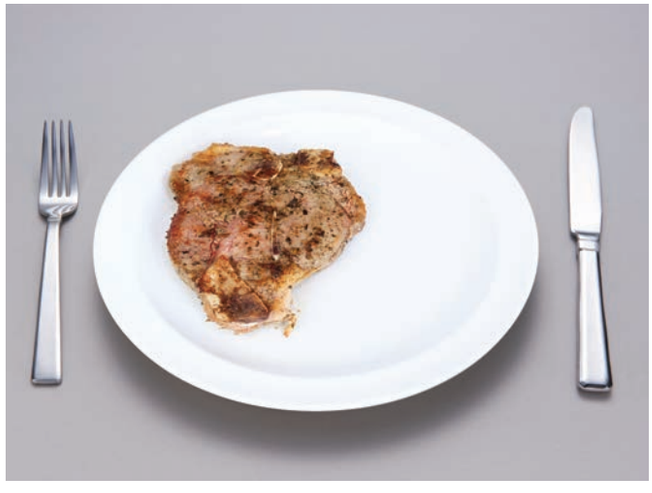
P042 – **2**

P042 – **3**

P042 – **4**

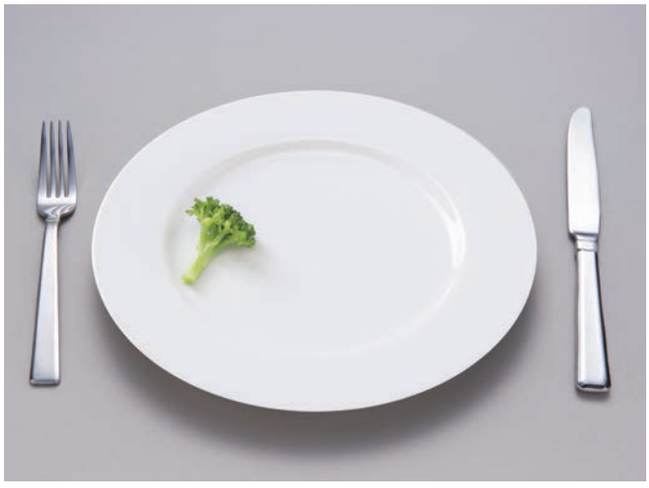


P042 – **5**



P042 – **6**

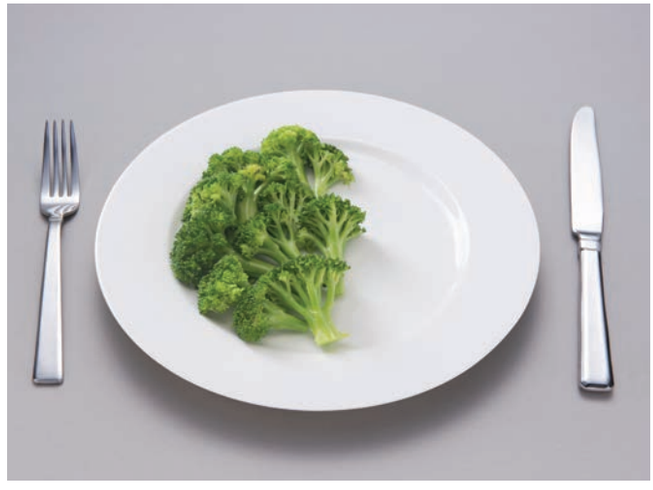
P043 BROCCOLI, COOKED



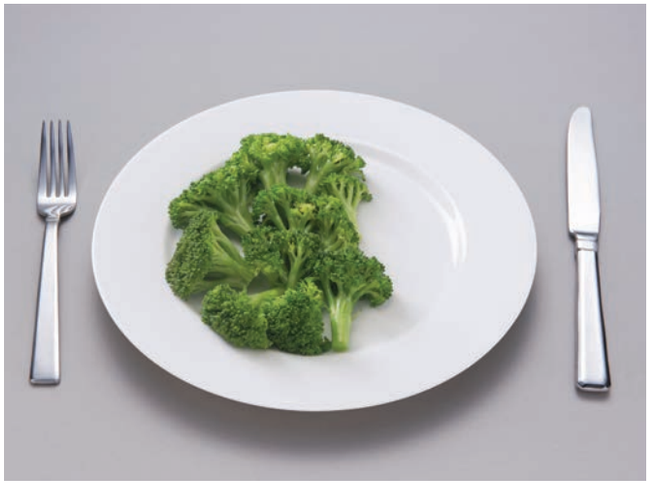
P043 – **1**

P043 – **2**

P043 – **3**



P043 – **4**

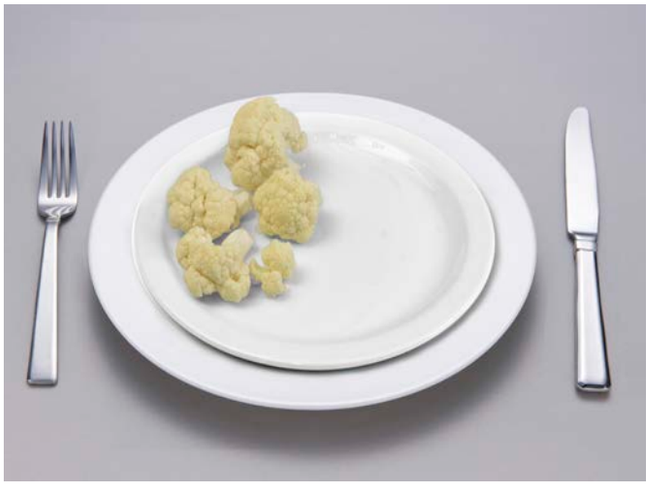


P043 – **5**

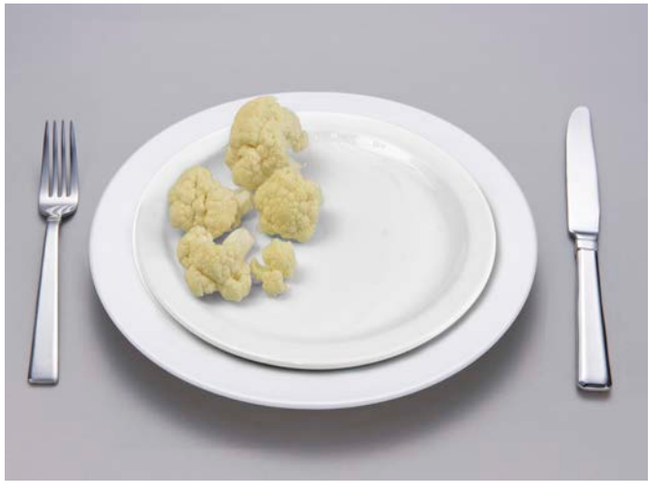
P043 – **6**

P044 CAULIFLOWER, COOKED

P044 – **1**



P044 – **2**

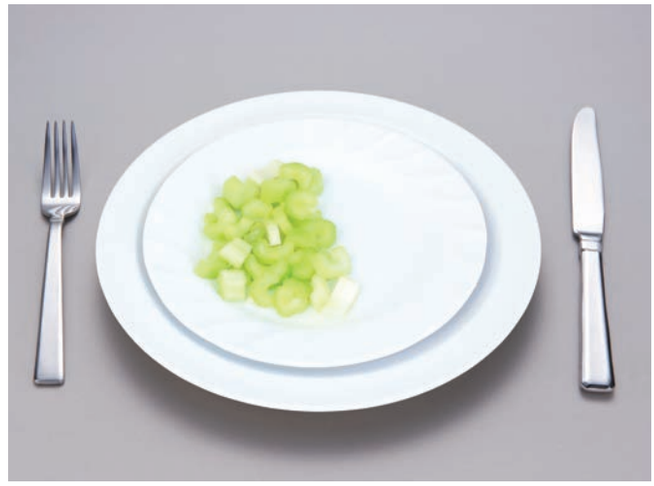


P044 – **3**

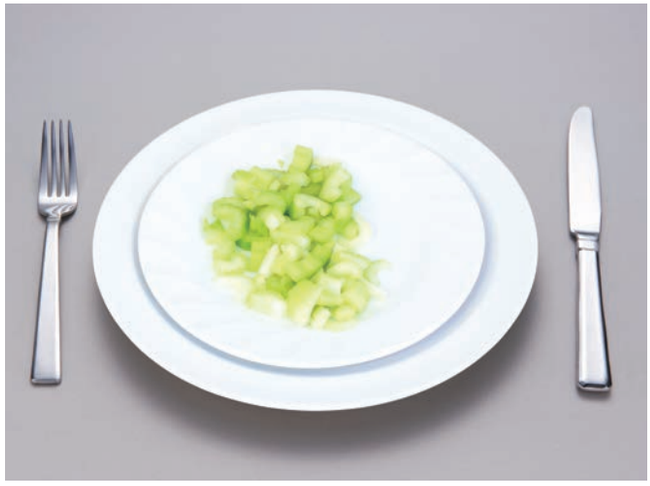
P044 – **4**

P045 CELERY STALKS

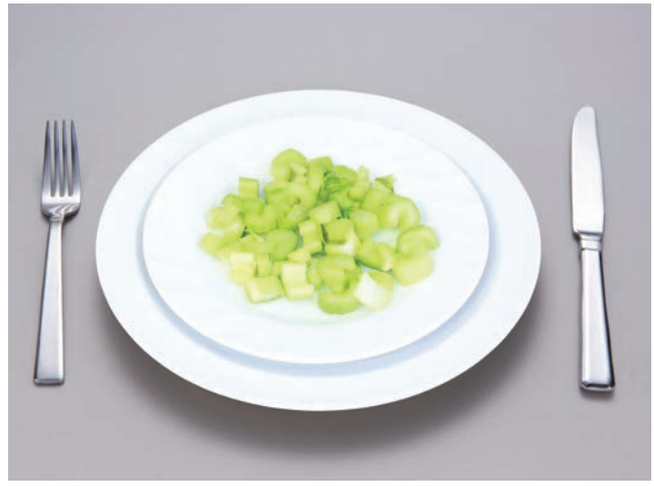
P045 – **1**



P045 – **2**



P045 – **3**



P045 – **4**

P046 CUCUMBER

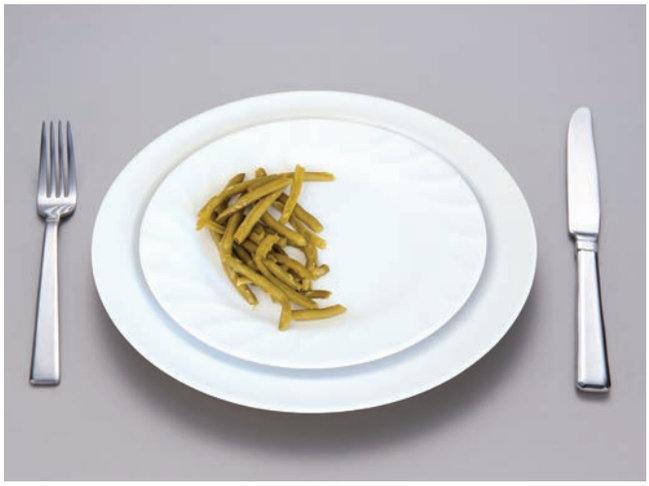
P046 – **1**

P046 – **2**

P046 – **3**

P046 – **4**

P047 GREEN / STRING BEANS, COOKED



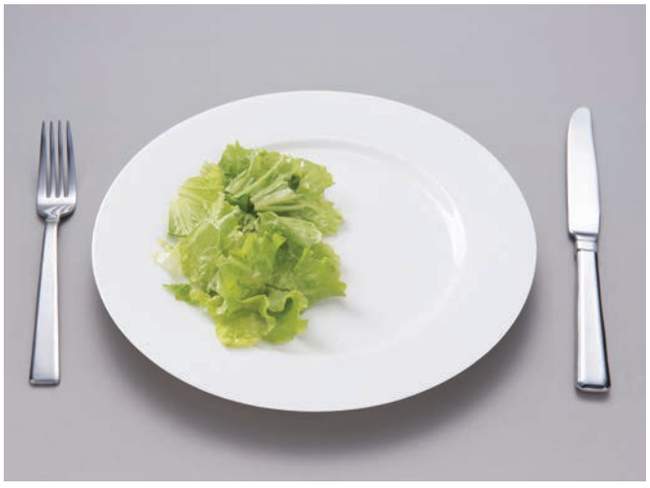
P047 – **1**

P047 – **2**

P047 – **3**

P048 LETTUCE

P048 – **1**



P048 – **2**

P048 – **3**

P048 – **4**

P049 MIXED VEGETABLES / CALIFORNIA BLEND, COOKED

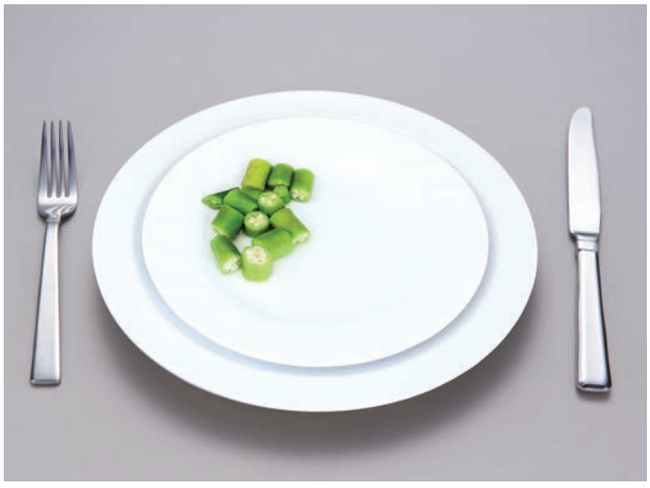
P049 – **1**

P049 – **2**

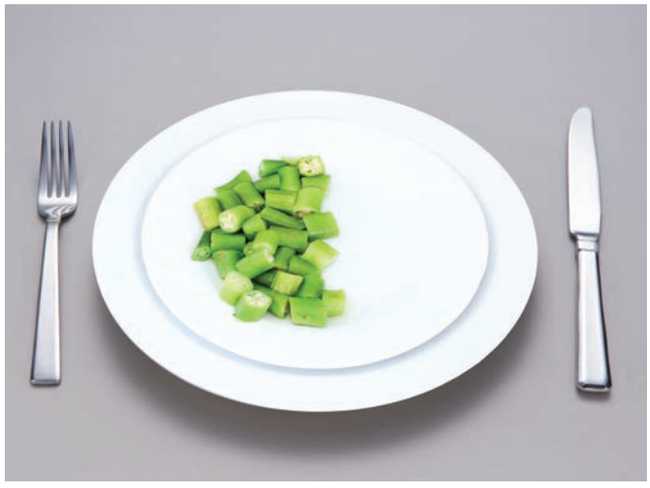
P049 – **3**

P049 – **4**

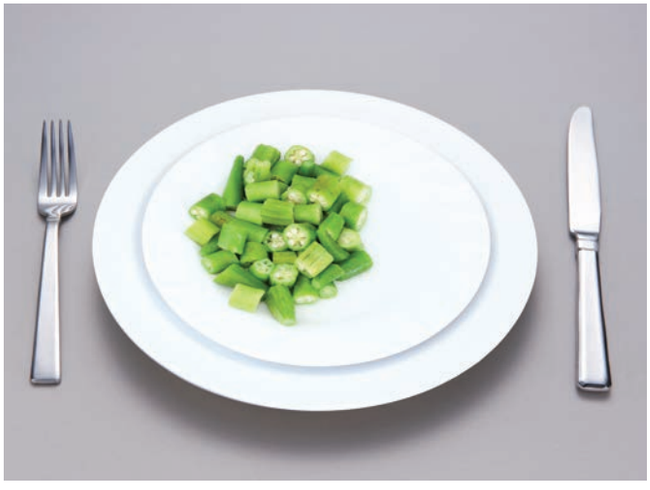
P050 OKRA, COOKED



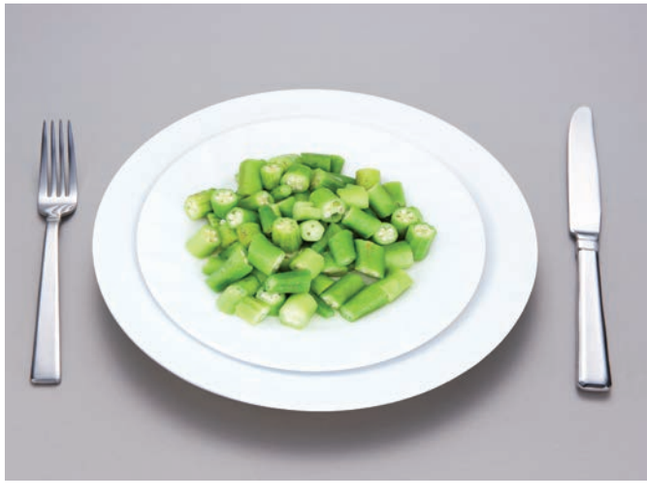
P050 – **1**



P050 – **2**



P050 – **3**



P050 – **4**

P051 PEAS AND CARROTS, COOKED

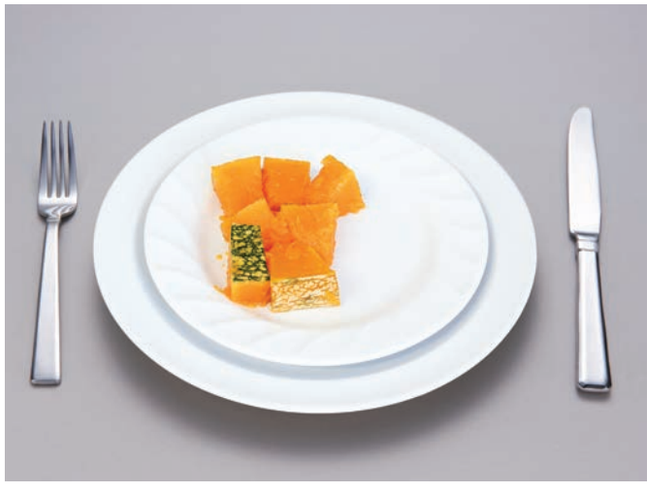
P051 – **1**

P051 – **3**

P051 – **4**

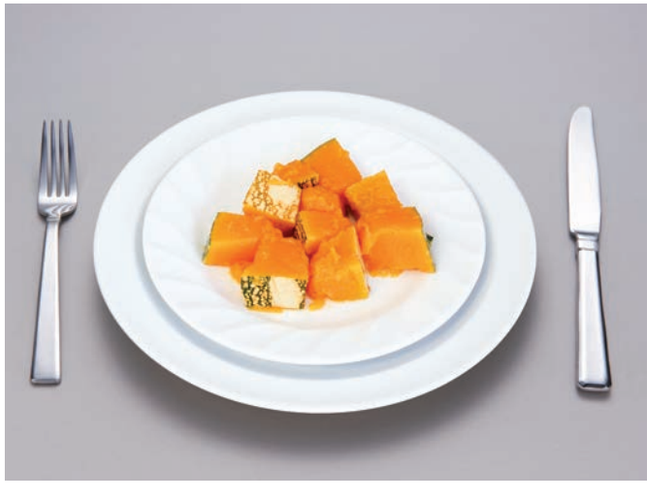
P052 PUMPKIN, COOKED

P052 – **1**



P052 – **2**

P052 – **3**



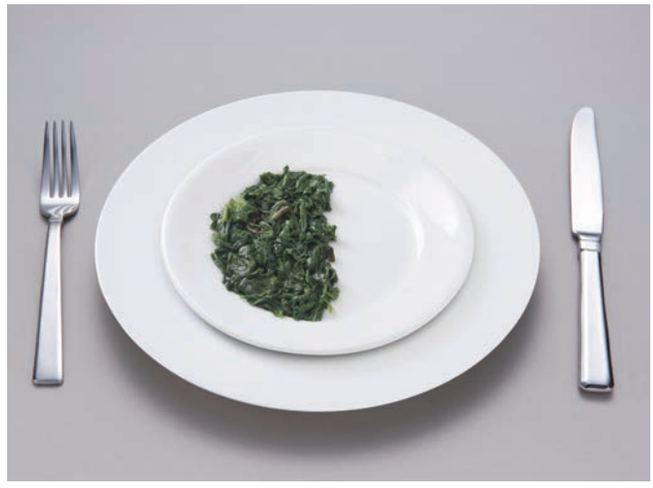
P052 – **4**

P052 – **5**

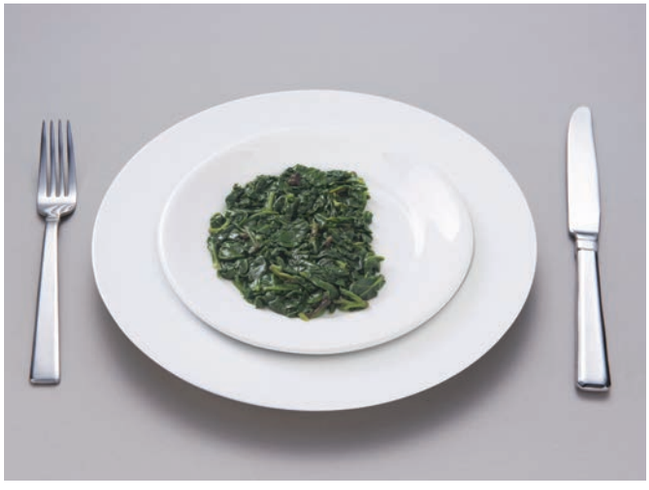
P052 – **6**

P053 SPINACH, COOKED

P053 – **1**



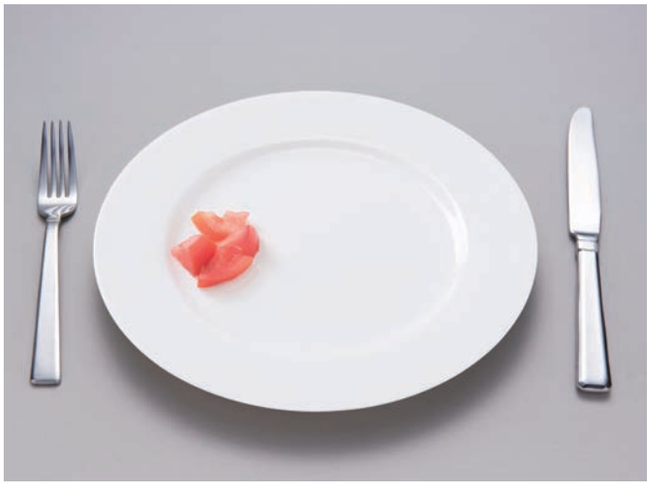
P053 – **2**



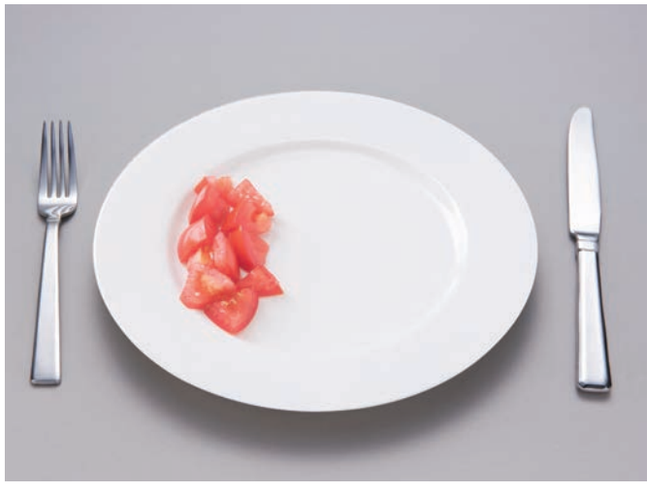
P053 – **3**

P053 – **4**

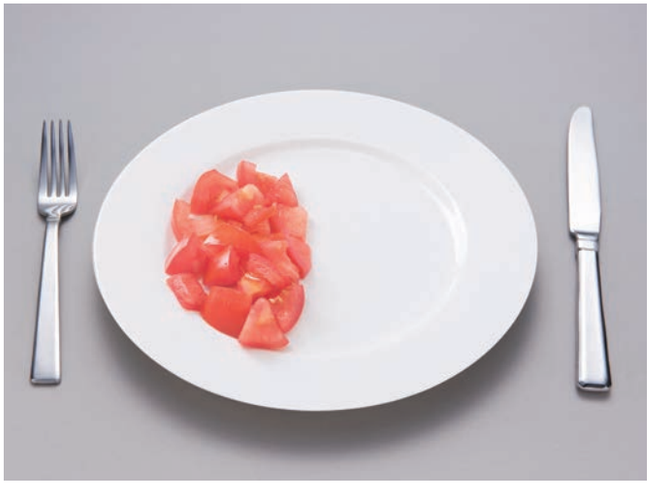
P054 TOMATO



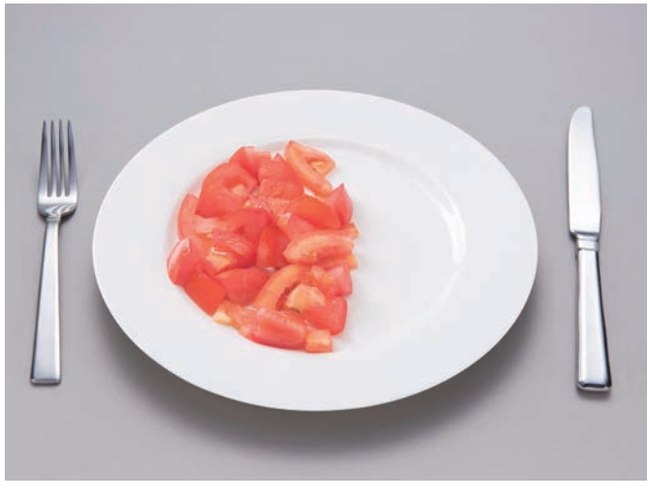
P054 – **1**



P054 – **2**

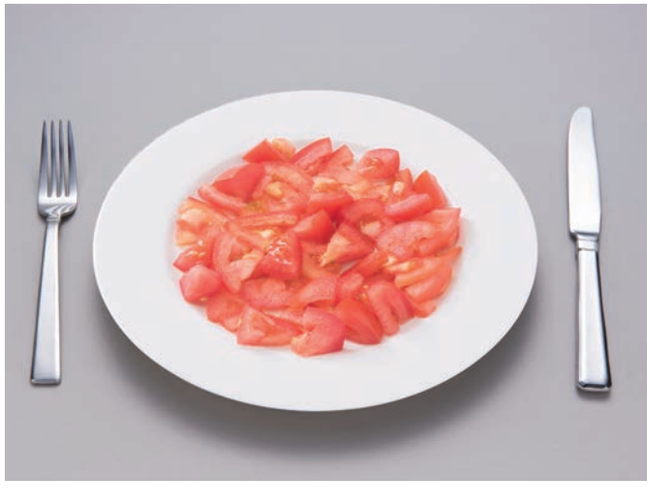


P054 – **3**



P054 – **4**

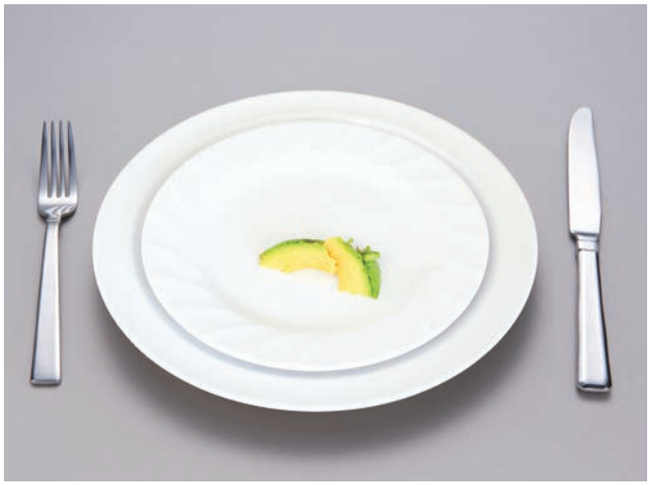
P054 – **5**



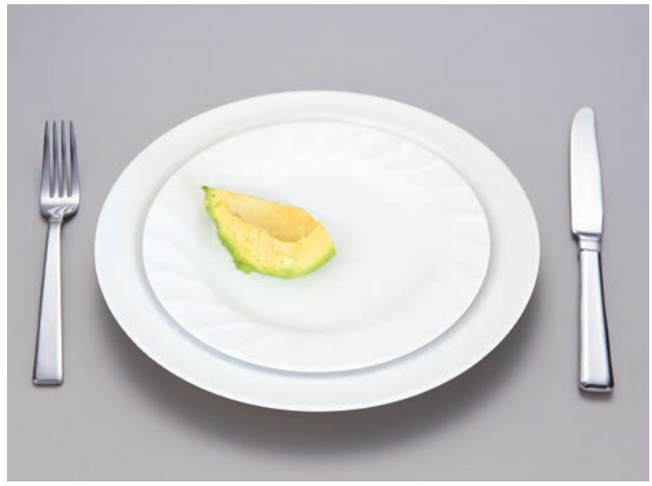
P054 – **6**

Photos: © André Sanches

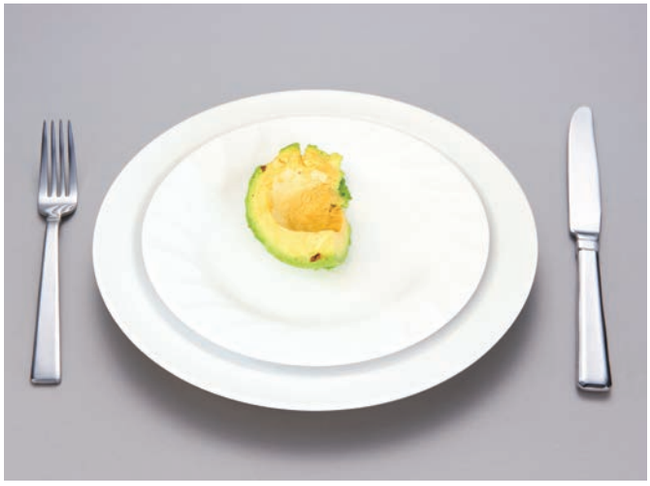
P055 AVOCADO



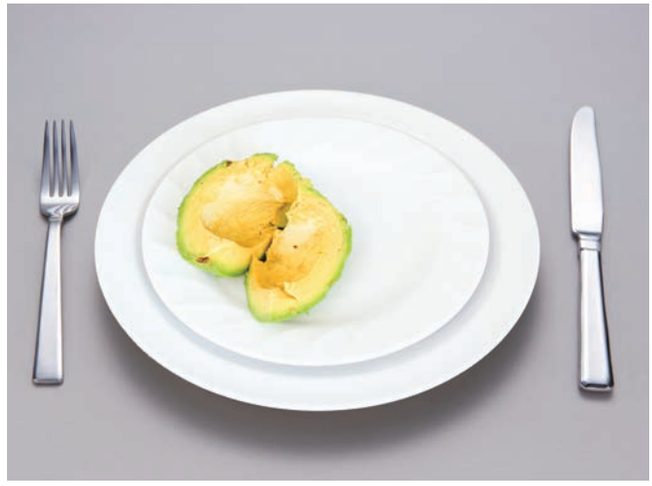
P055 – **1**



P055 – **2**

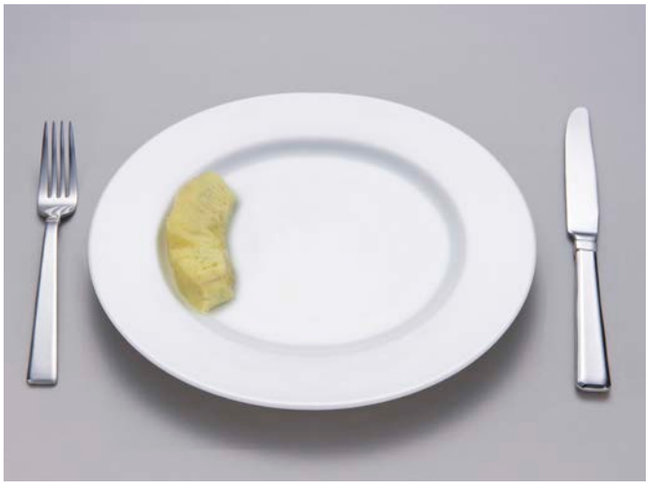


P055 – **3**

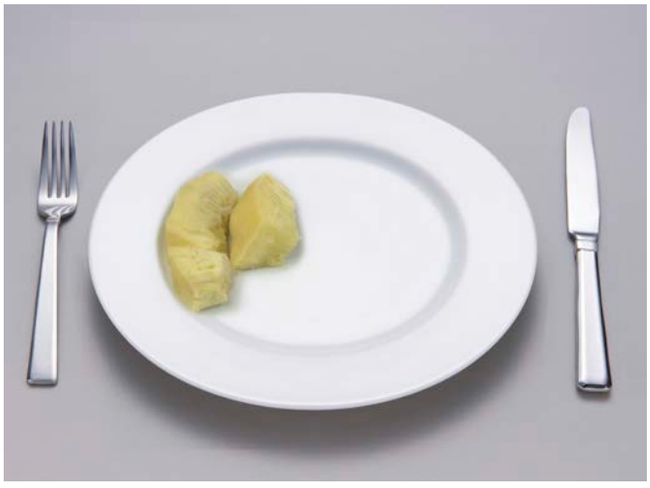


P055 – **4**

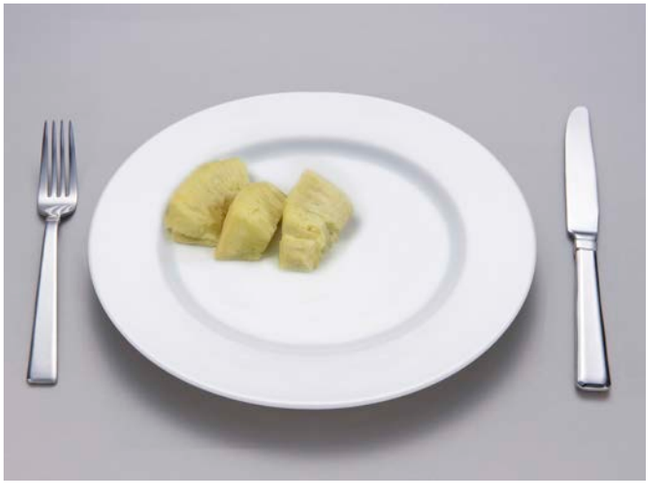
P056 BREADFRUIT



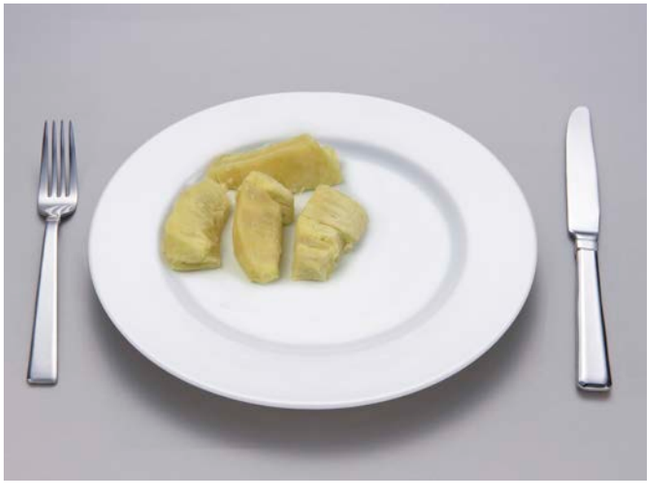
P056 – **1**



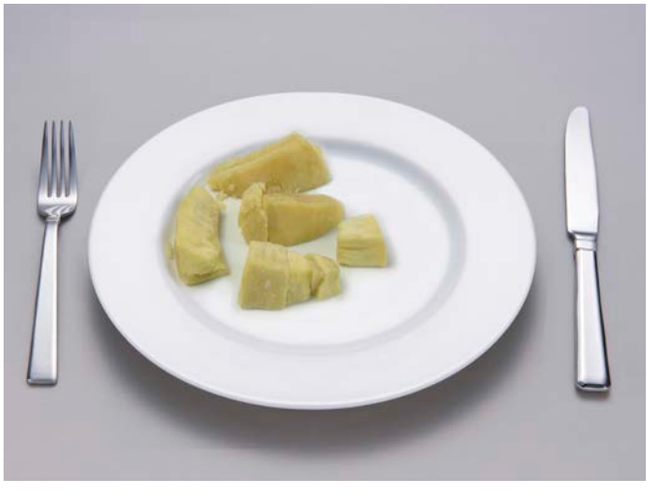
P056 – **2**



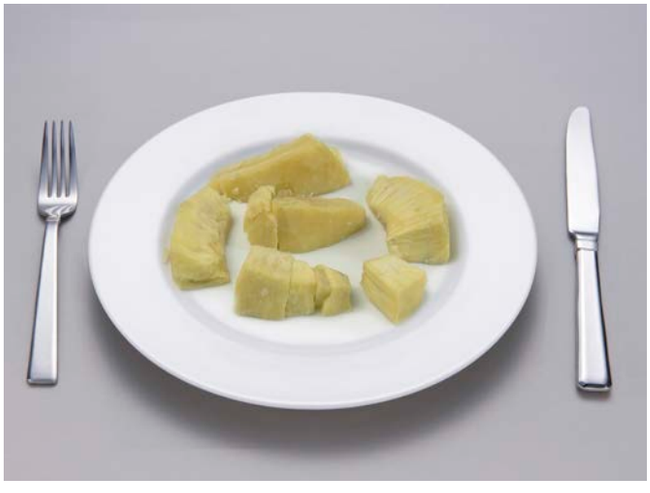
P056 – **3**



P056 – **4**



P056 – **5**



P056 – **6**

P057 BREADFRUIT SALAD

P057 – **1**

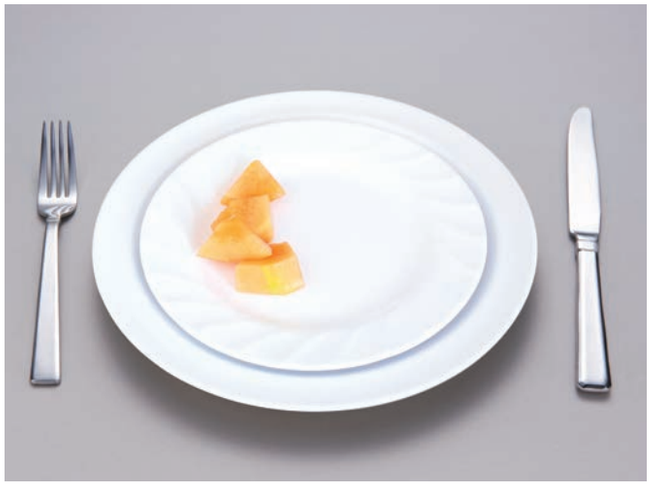
P057 – **2**

P057 – **3**

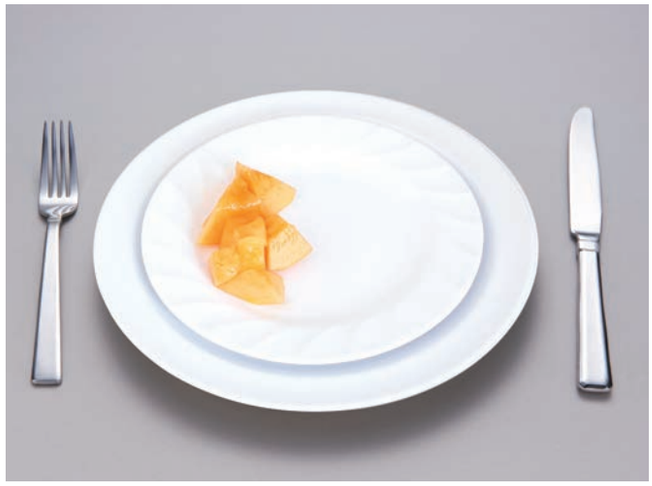
P057 – **4**

P057 – **5**

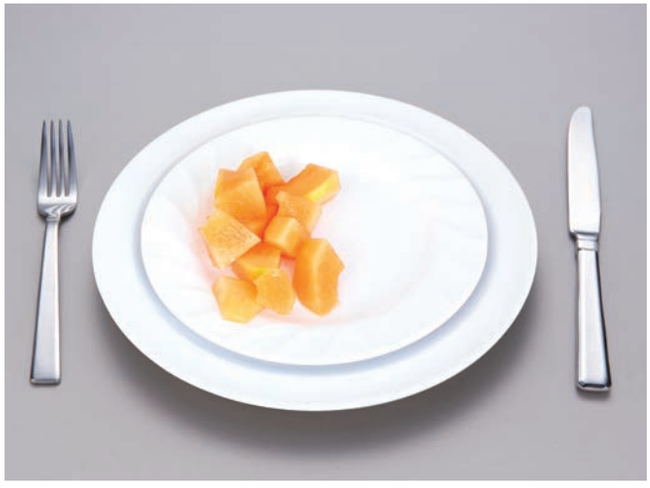
P058 CANTALOUPE



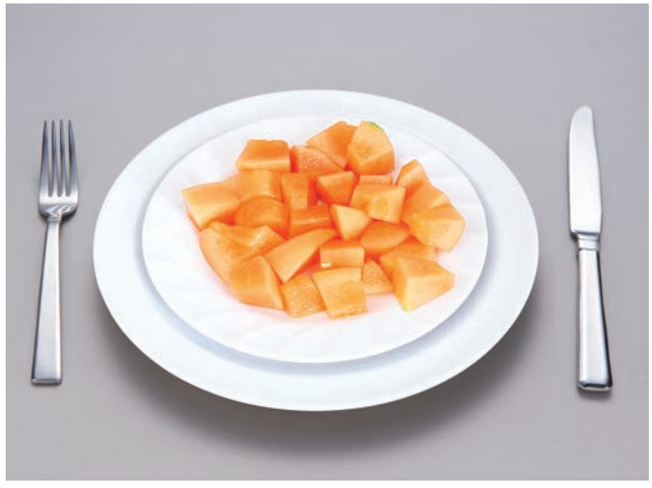
P058 – **1**



P058 – **2**



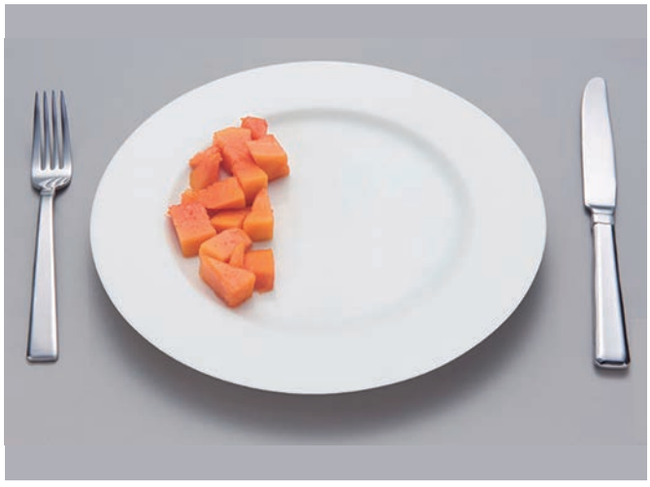
P058 – **3**



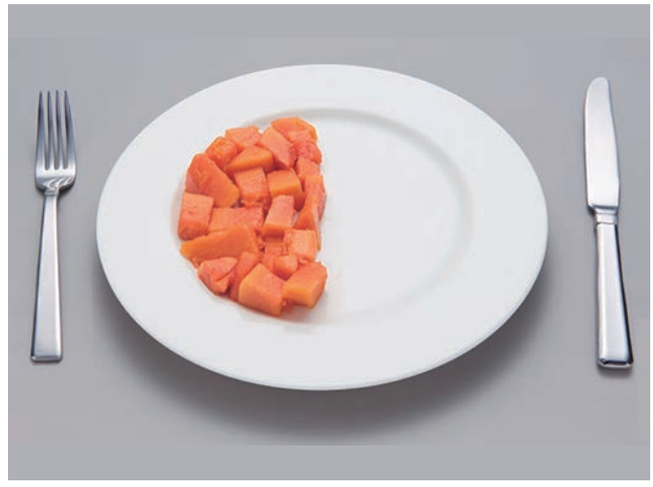
P058 – **4**

Photos: © Ervin Weekes

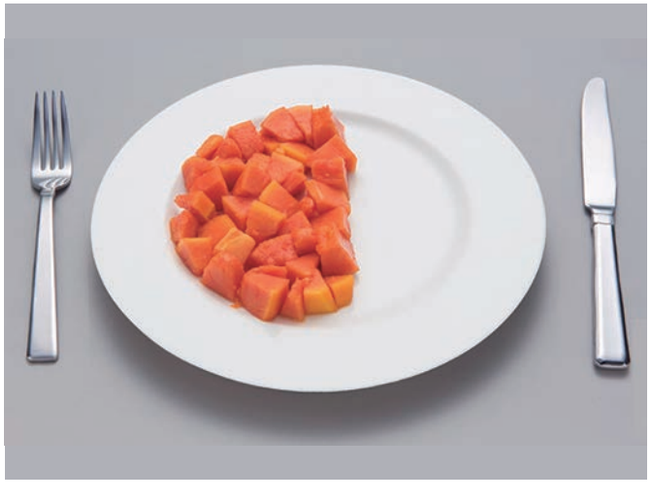
P059 PAPAYA, PIECES



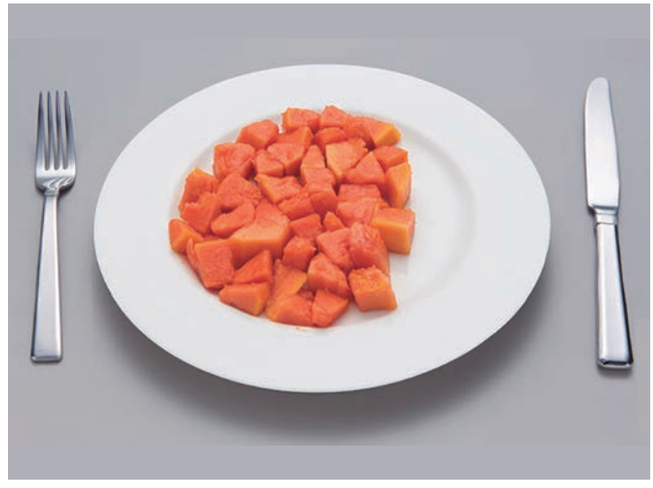
P059 – **1**



P059 – **2**

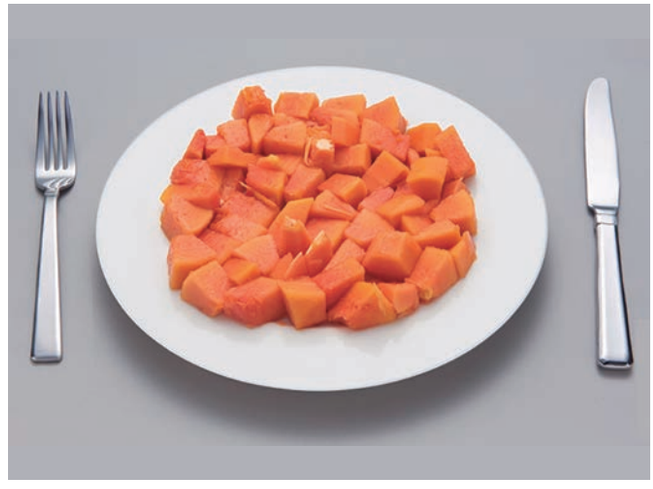


P059 – **3**



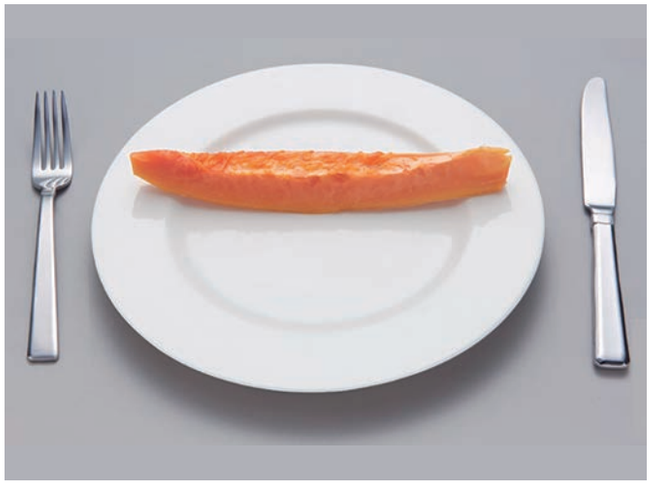
P059 – **4**

P059 – **5**

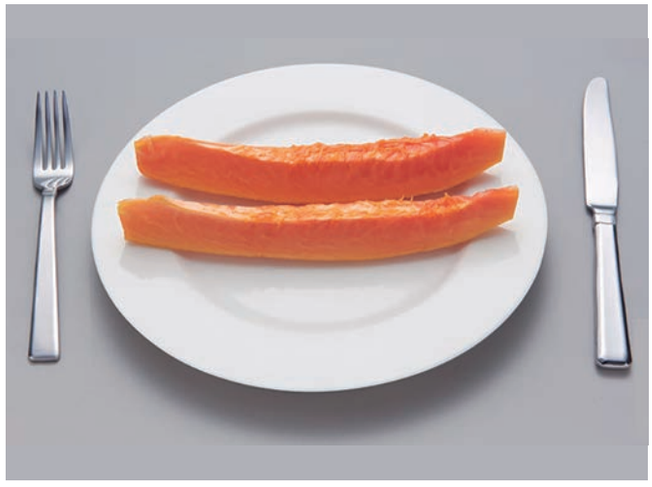


P059 – **6**

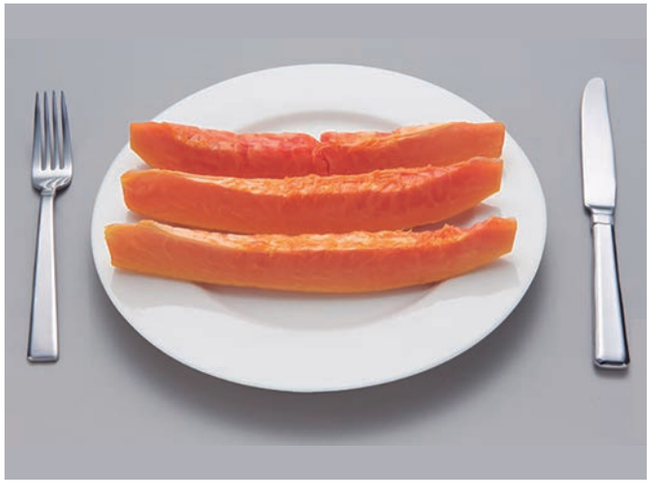
P060 PAPAYA, SLICES



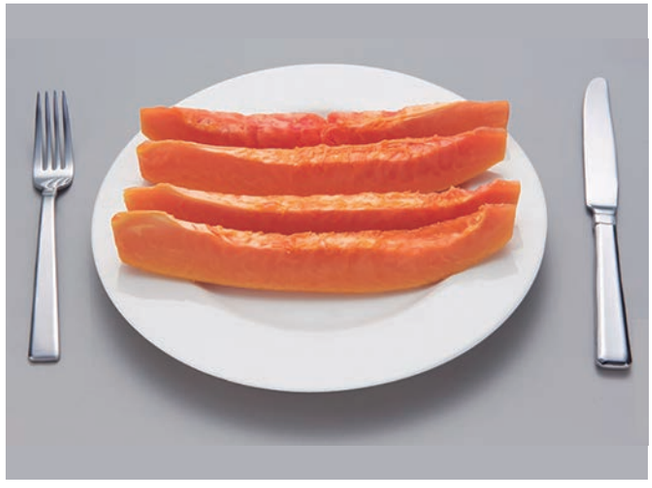
P060 – **1**



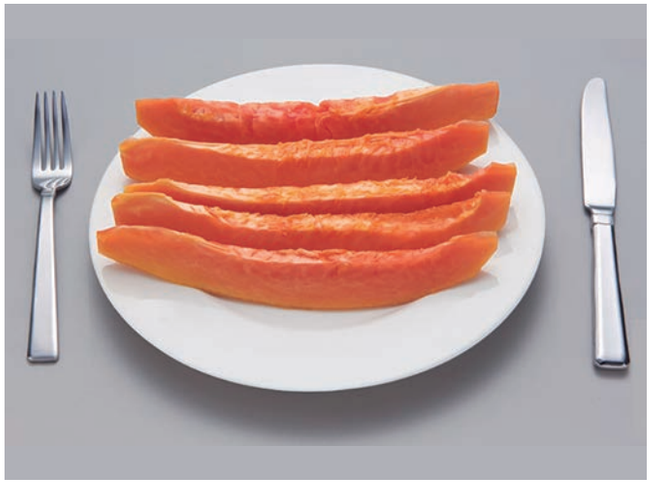
P060 – **2**



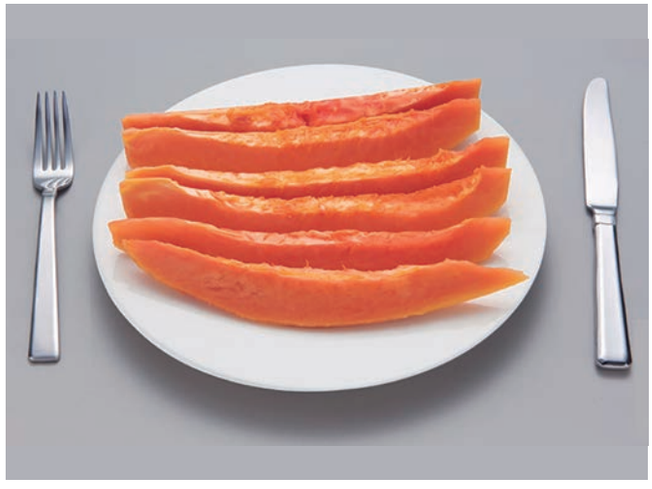
P060 – **3**



P060 – **4**



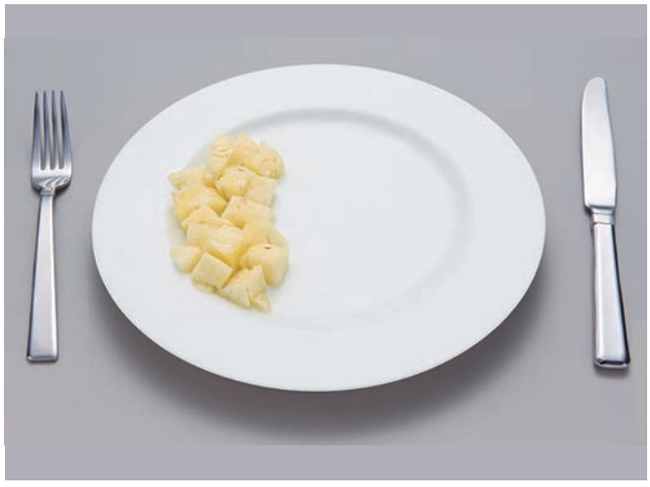
P060 – **5**



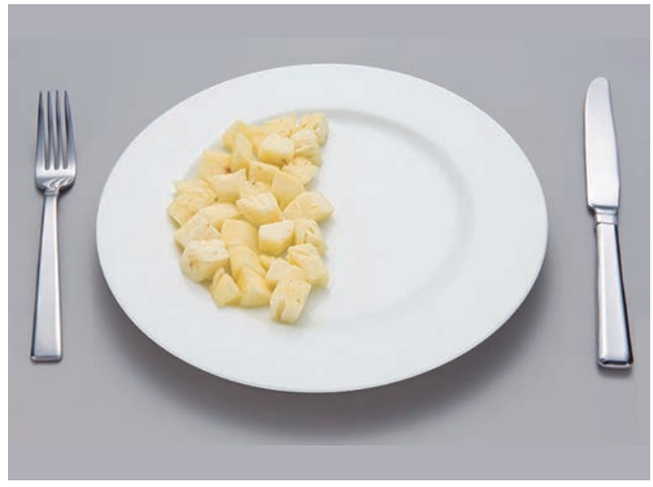
P060 – **6**

Photos: © André Sanches

P061 PINEAPPLE

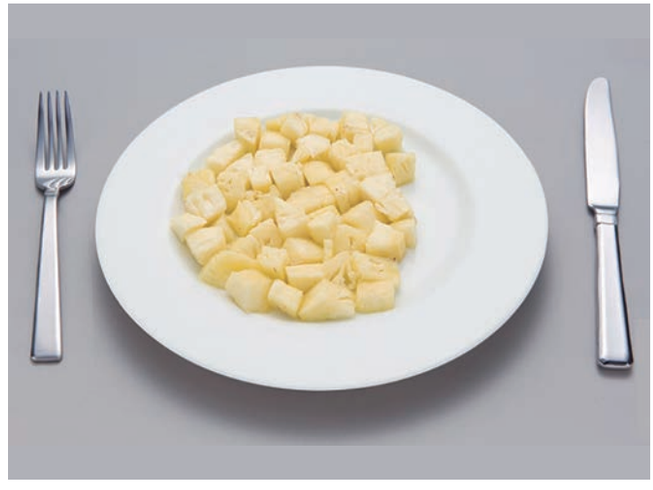


P061 – **1**



P061 – **2**

P061 – **3**

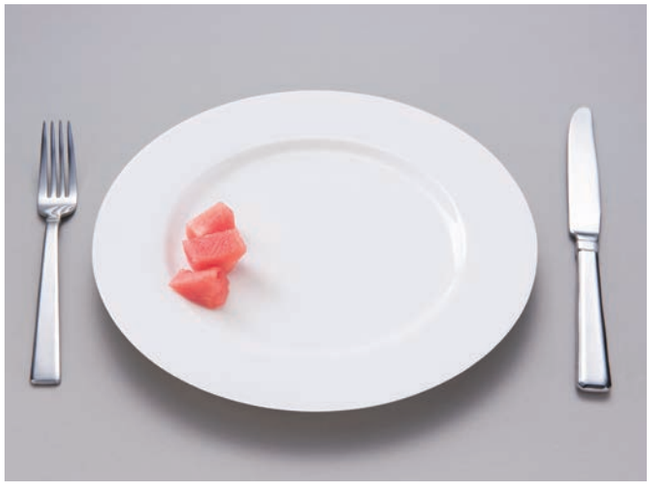


P061 – **4**

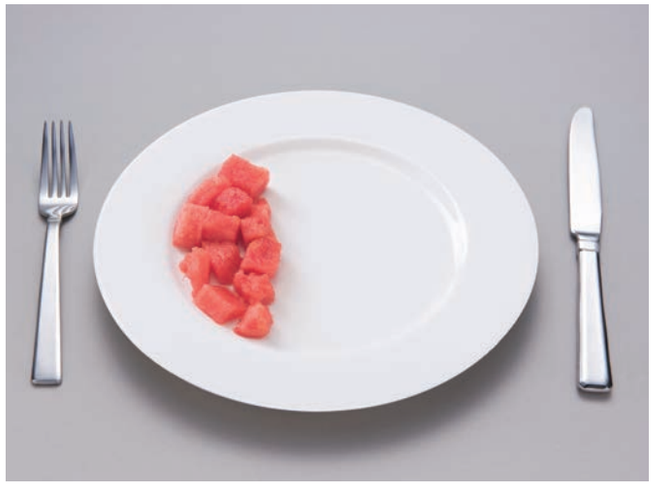
P061 – **5**

P061 – **6**

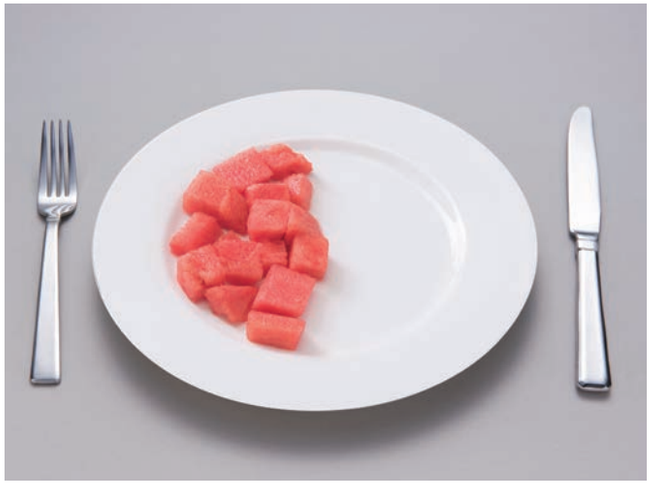
P062 WATERMELON



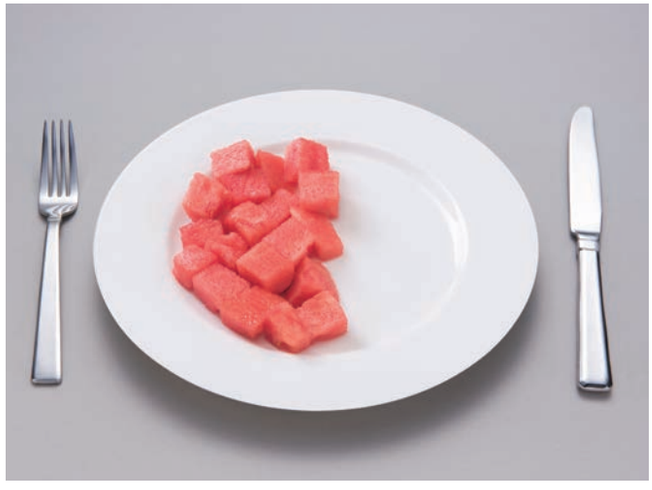
P062 – **1**



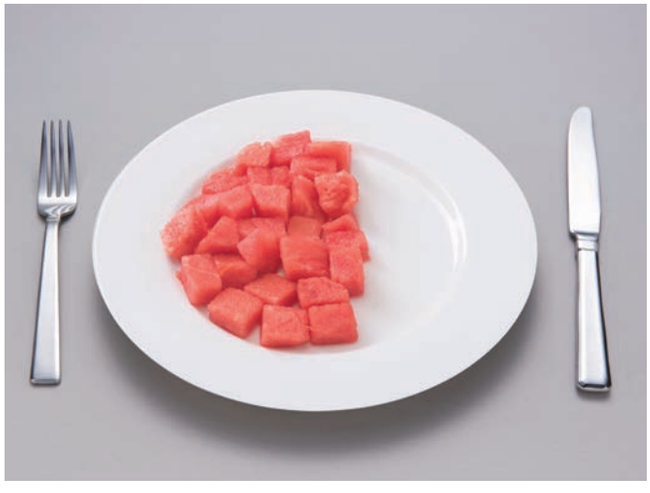
P062 – **2**



P062 – **3**



P062 – **4**



P062 – **5**

P062 – **6**

P063 CHICKEN SOUP

P063 – **1**

P063 – **2**

P063 – **3**

P063 – **4**

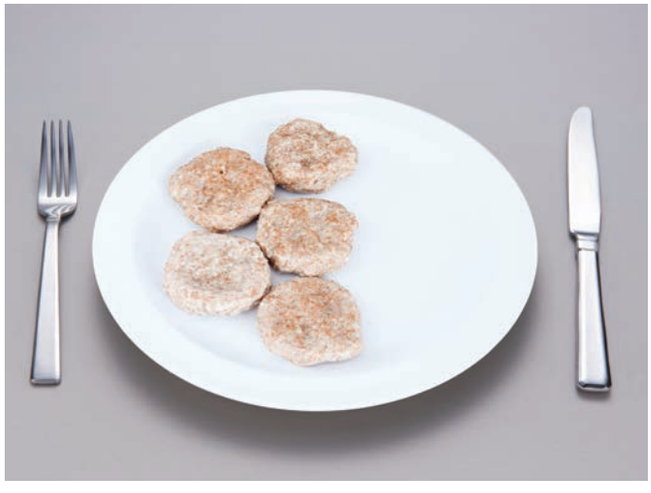
P064 DUMPLINGS / COCONUT DUMPLINGS

P064 – **1**

P064 – **2**

P064 – **3**

P064 – **4**



P064 – **5**

P064 – **6**

P065 COLESLAW

P065 – **1**

P065 – **2**

P065 – **3**

P065 – **4**

Photos: © Ervin Weekes

P066 GREEN BANANA AND FISH WITH OKRA

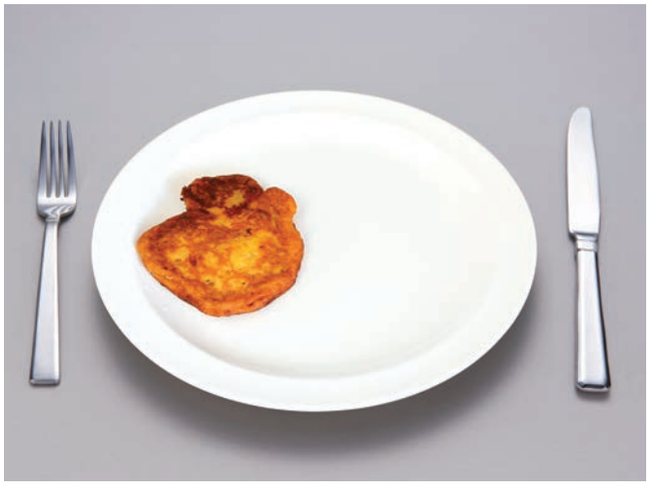
P066 – **1**

P066 – **2**

P066 – **3**

P066 – **4**

P067 PUMPKIN FRITTERS



P067 – **1**

P067 – **2**

P067 – **3**

P067 – **4**

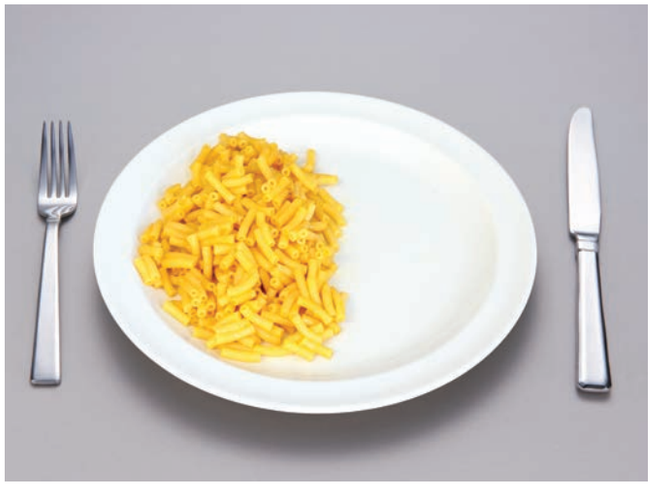
P067 – **5**

P067 – **6**

P068 MACARONI AND CHEESE

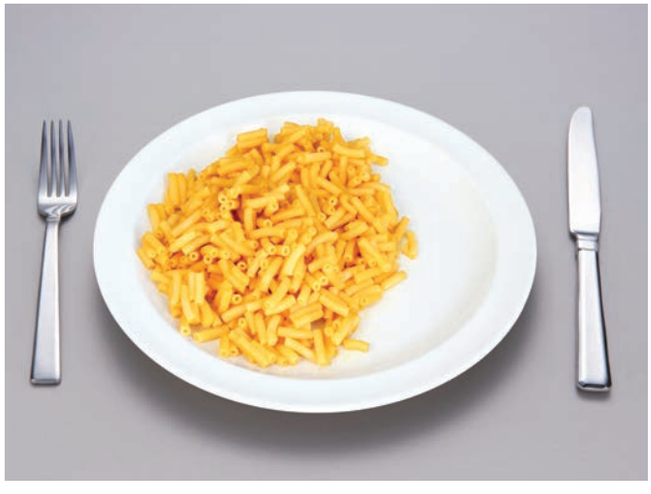
P068 – **1**

P068 – **2**

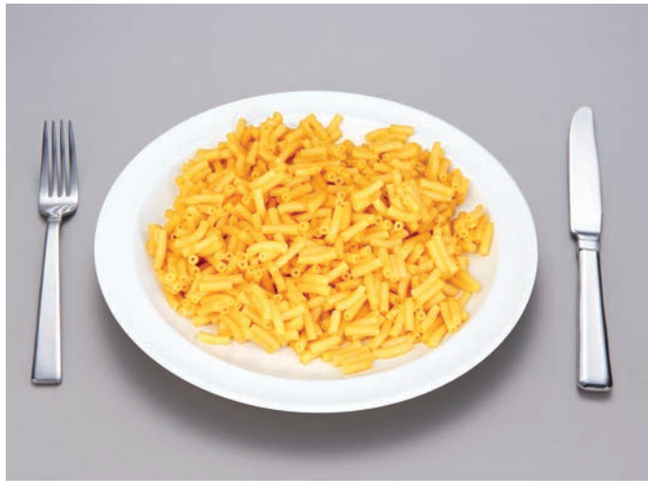


P068 – **3**

P068 – **4**



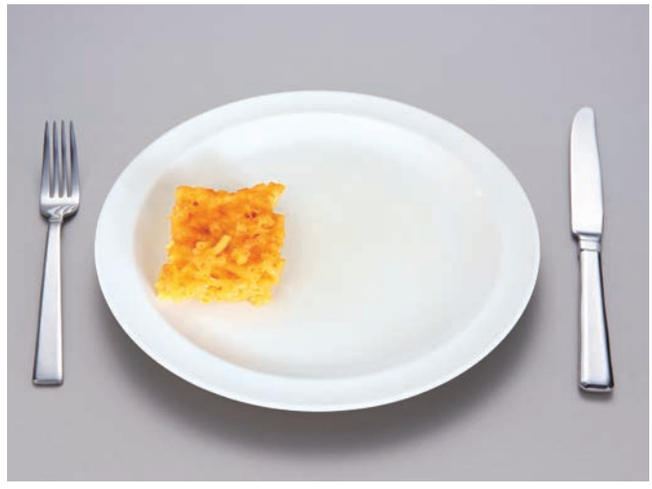
P068 – **5**



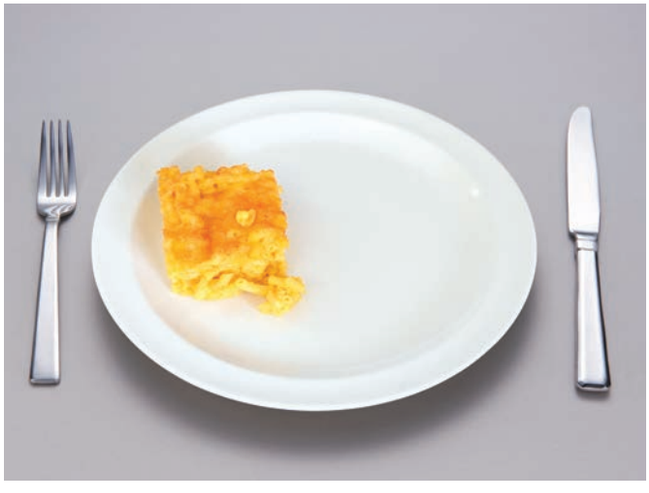
P068 – **6**

P069 MACARONI PIE

P069 – **1**

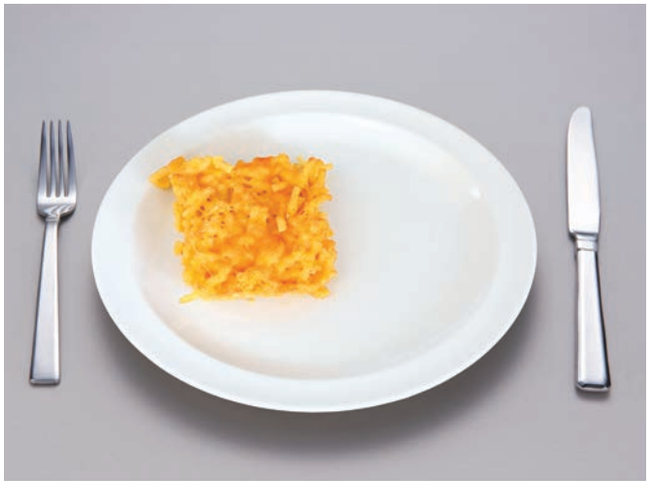


P069 – **2**

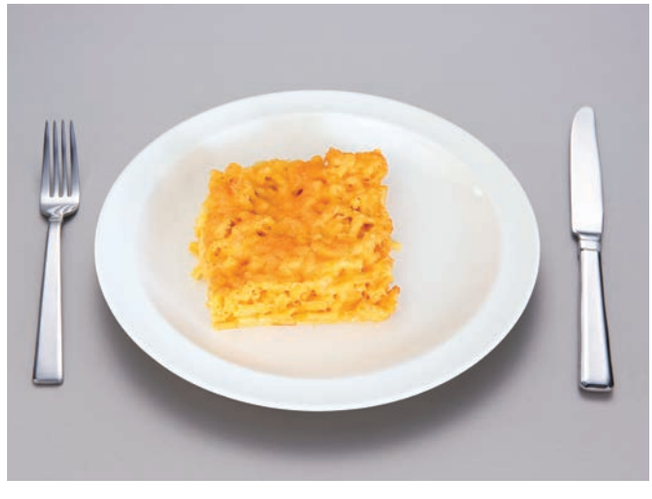


P069 – **3**

P069 – **4**

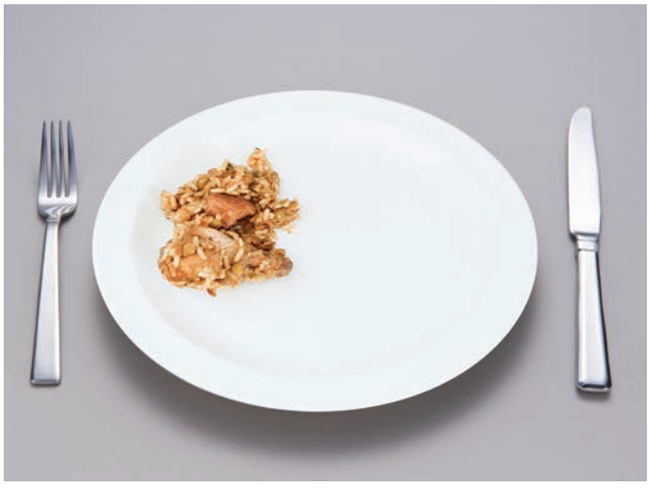


P069 – **5**

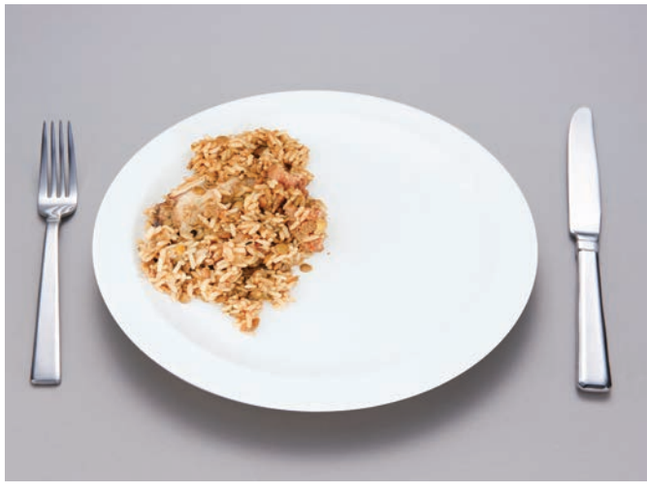


P069 – **6**

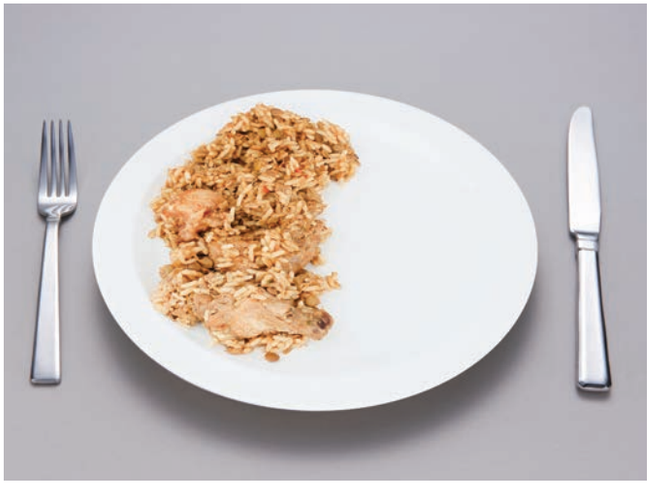
P070 COOK UP/ CHICKEN PELAU



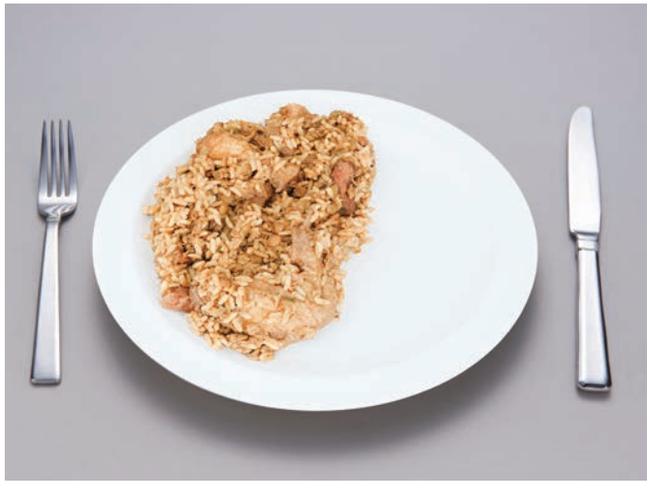
P070 – **1**



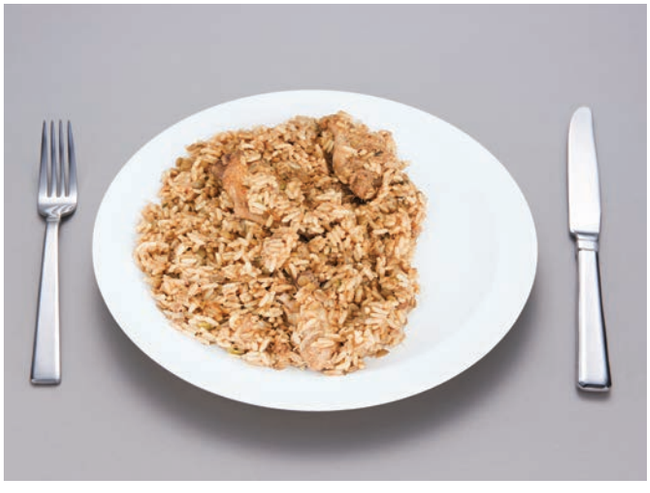
P070 – **2**



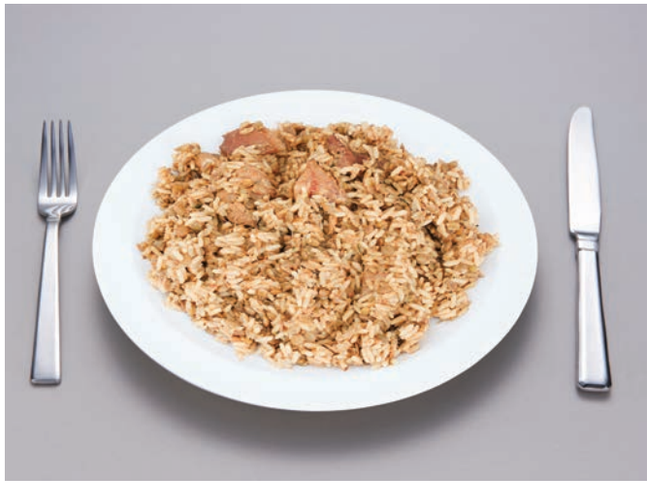
P070 – **3**



P070 – **4**



P070 – **5**

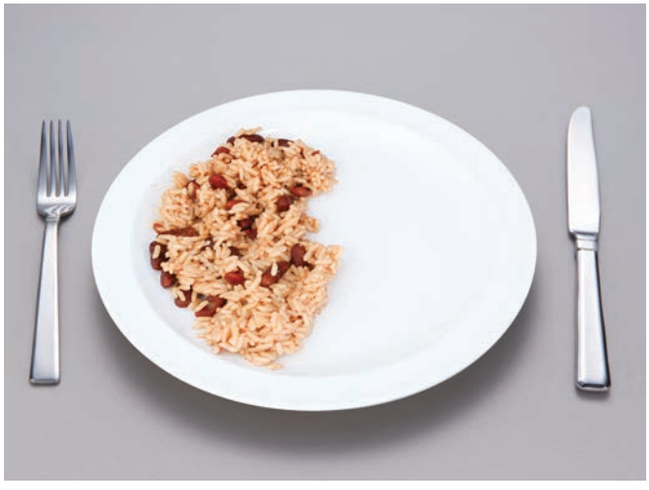


P070 – **6**

P071 RICE AND BEANS

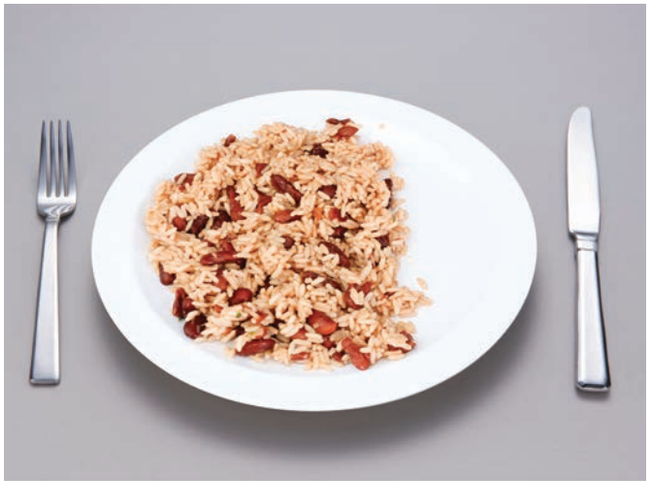
P071 – **1**

P071 – **2**

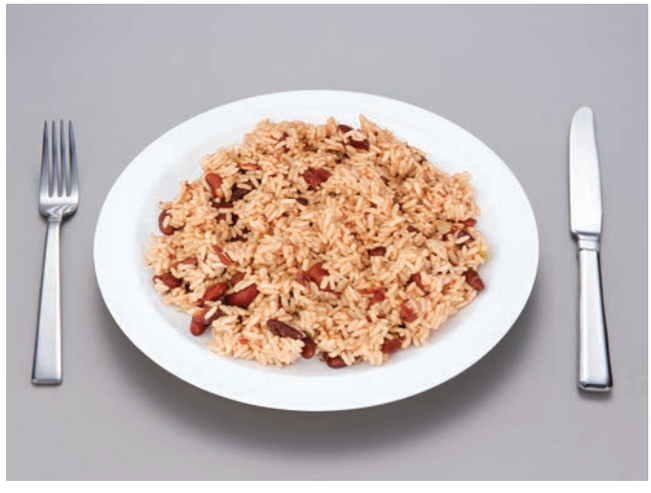


P071 – **3**

P071 – **4**



P071 – **5**



P071 – **6**

PHOTOS: FOOD PORTION UNITS

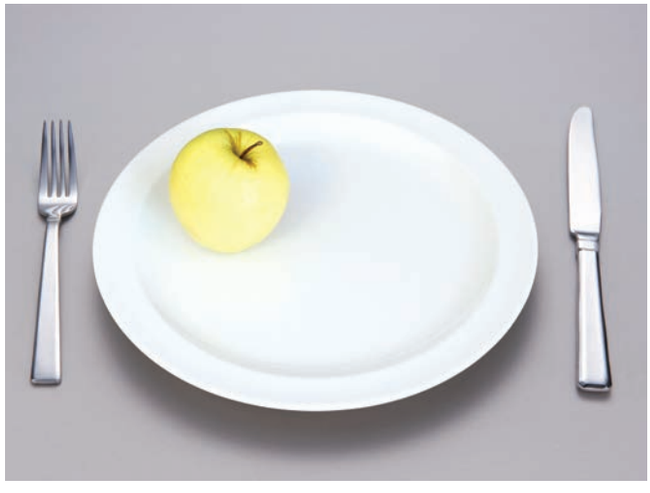
P072 APPLE, TYPES

P072 – **1**

P072 – **2**

P072 – **3**

P072 – **4**



P072 – **5**

P072 – **6**

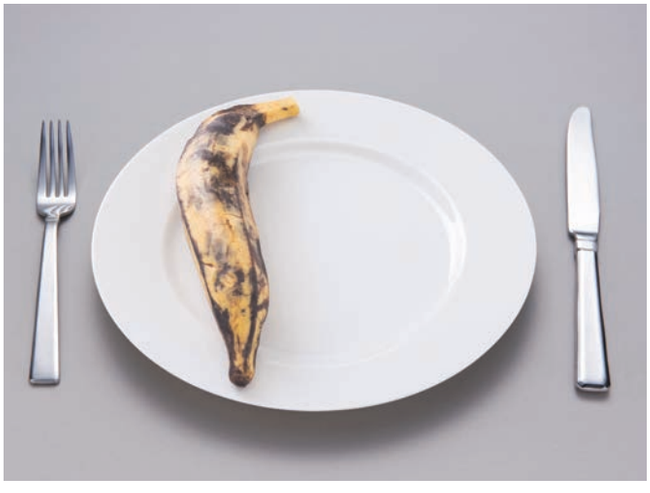
P073 BANANA, TYPES

P073 – **1**

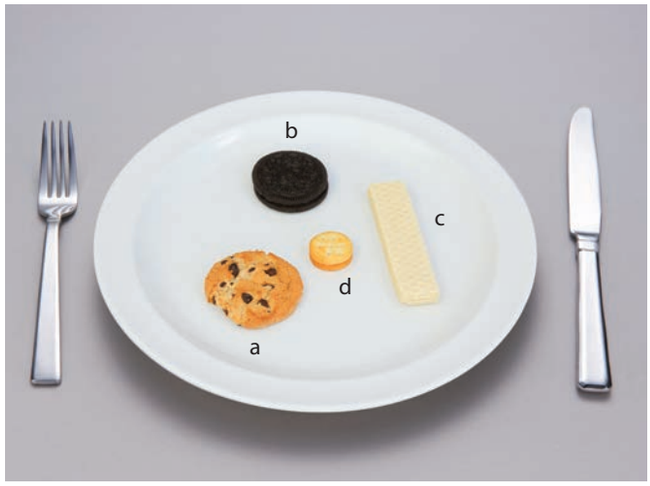
P073 – **2**

P073 – **3**

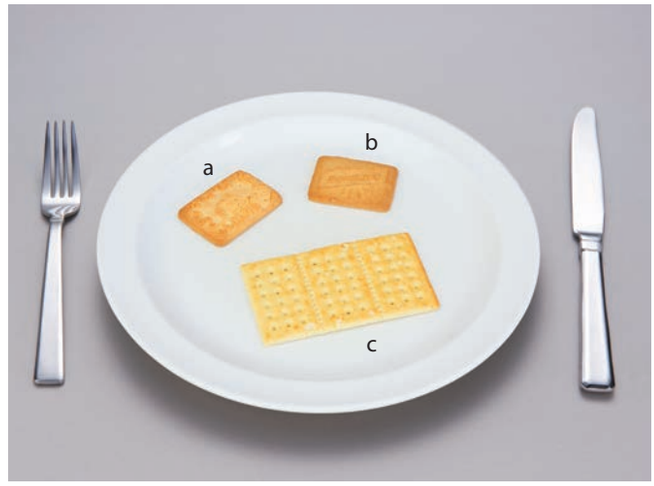
P073 – **4**



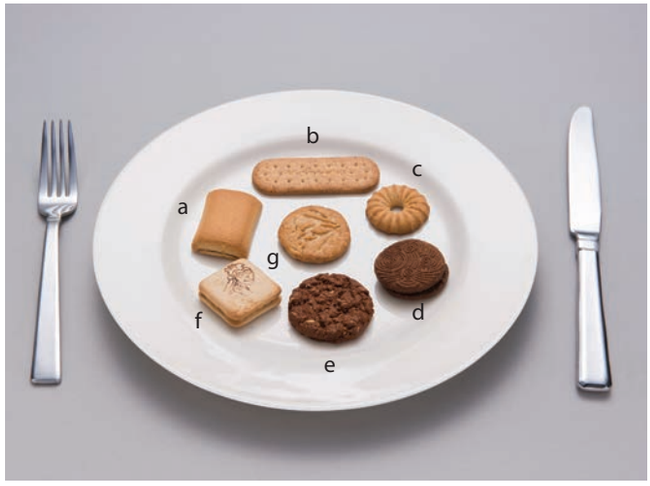
P073 – **5**



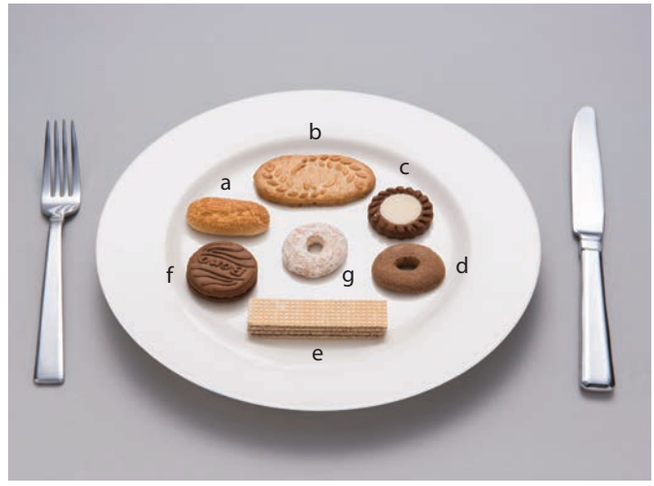
P074 – **1**



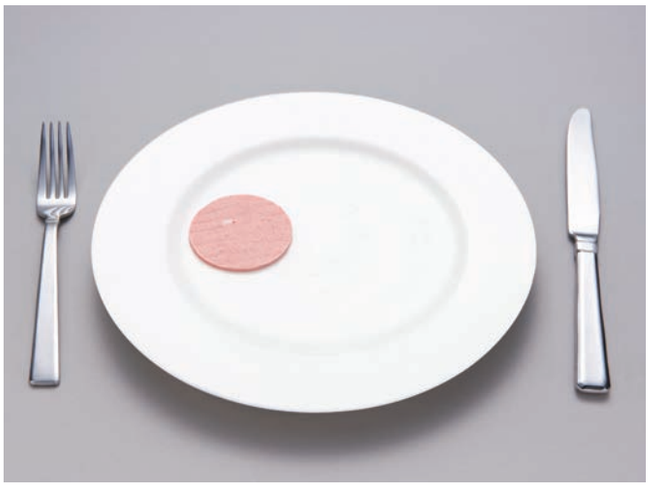
P074 – **2**



P074 – **3**



P074 – **4**



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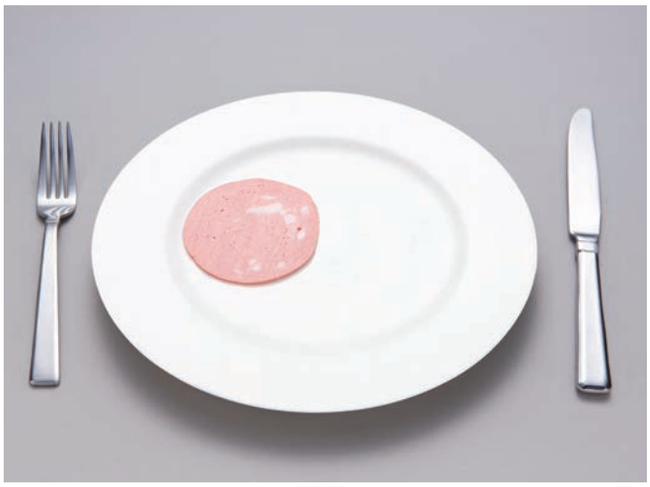

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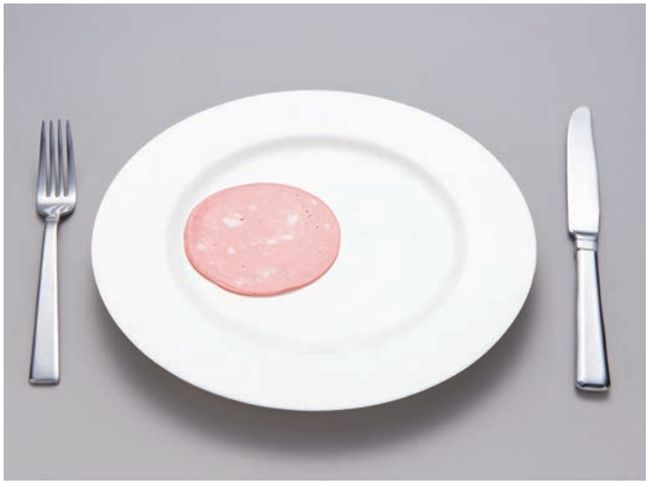
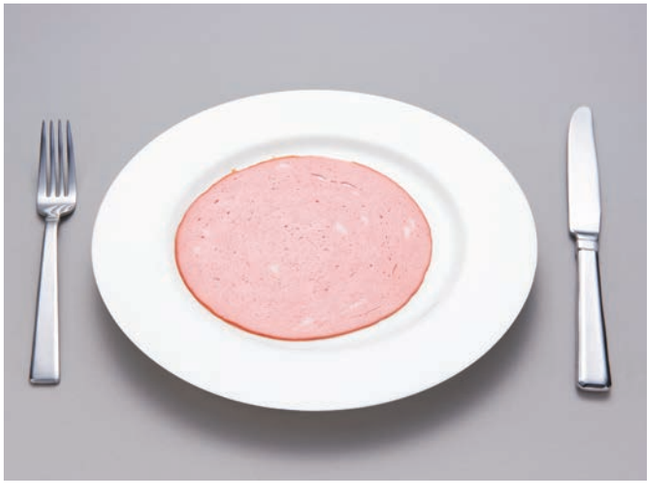


P075 – **3**



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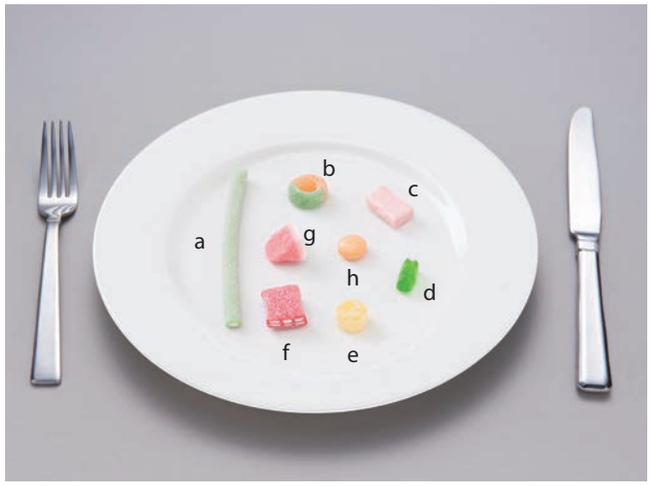
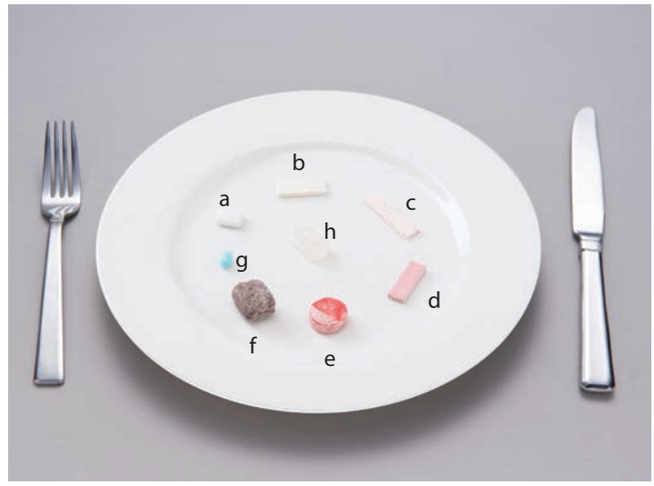
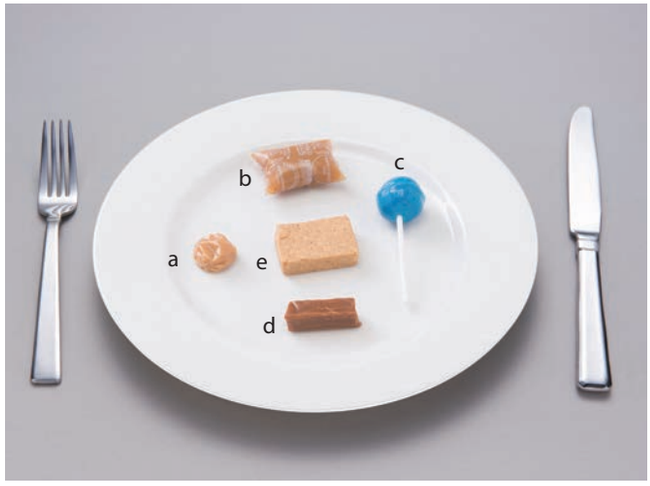


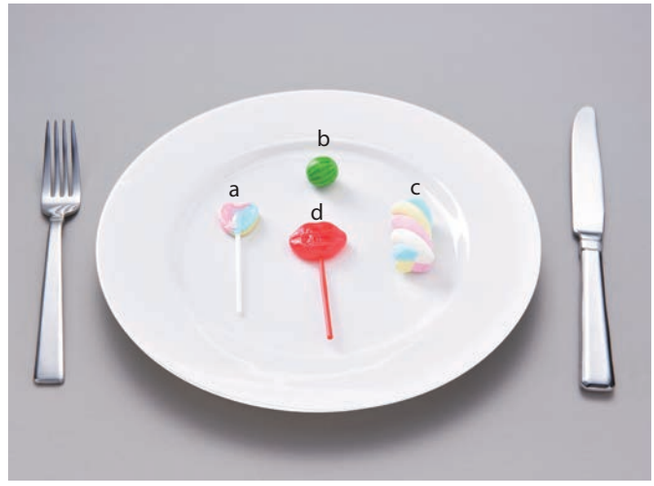
P076 – **1**



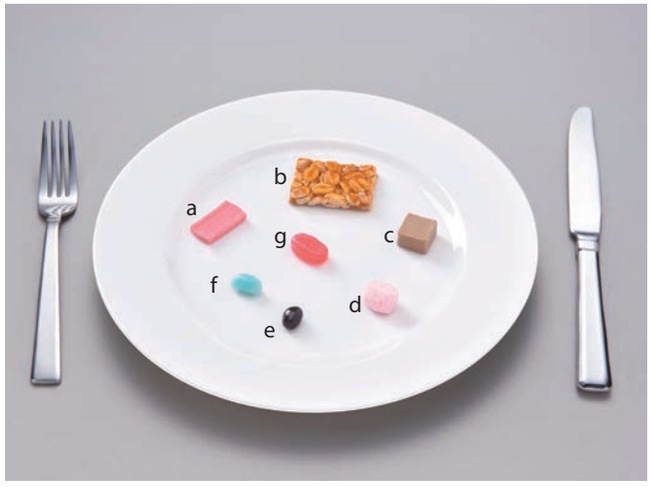
P076 – **2**



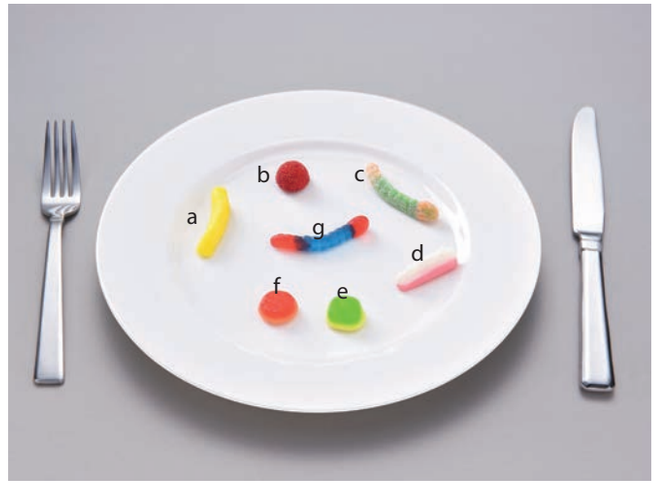
P076 – **3**



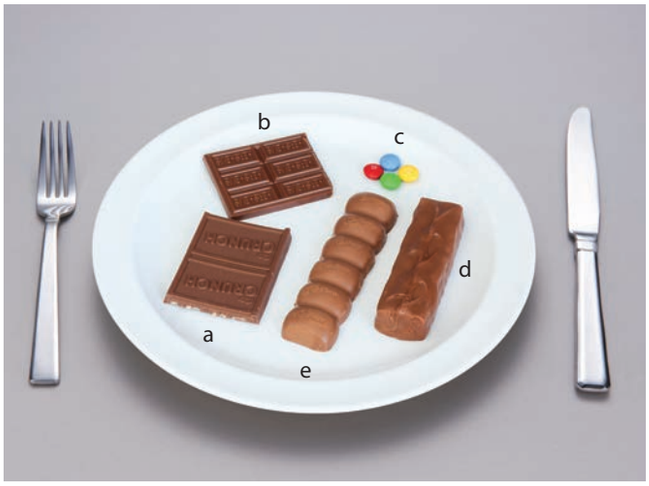
P076 – **4**



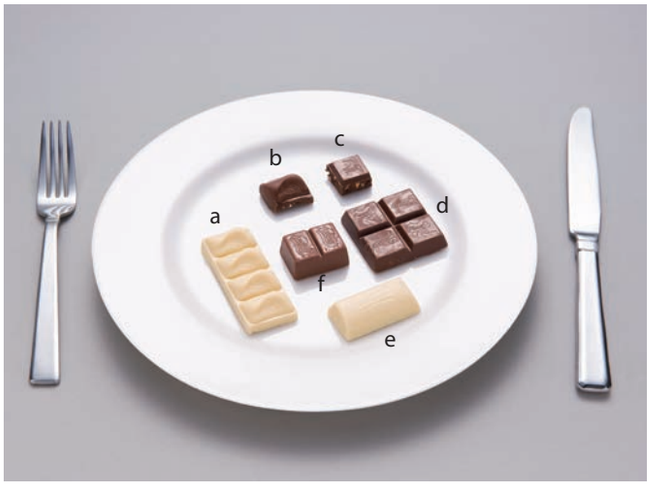
P076 – **5**



P076 – **6**



P077 – **1**

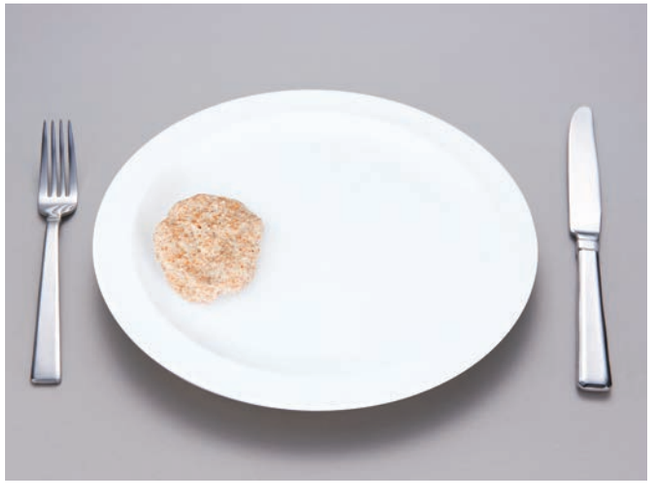


P077 – **2**

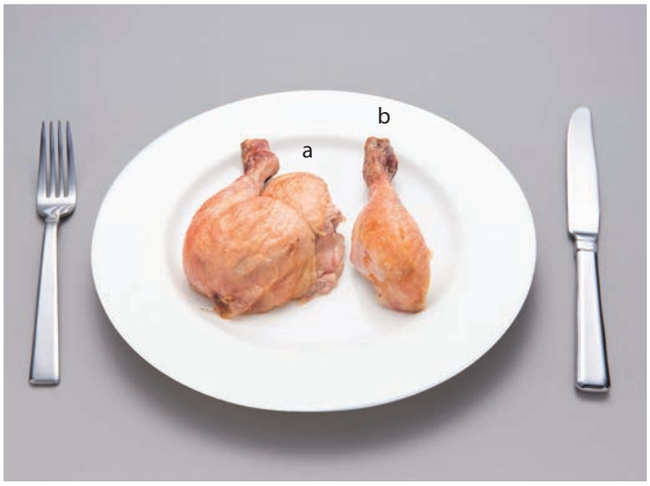
P077 – **3**

P078 – **1**

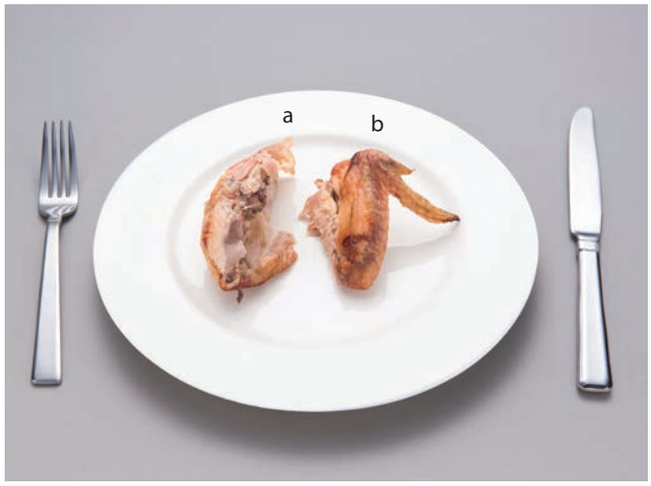
P078 – **2**



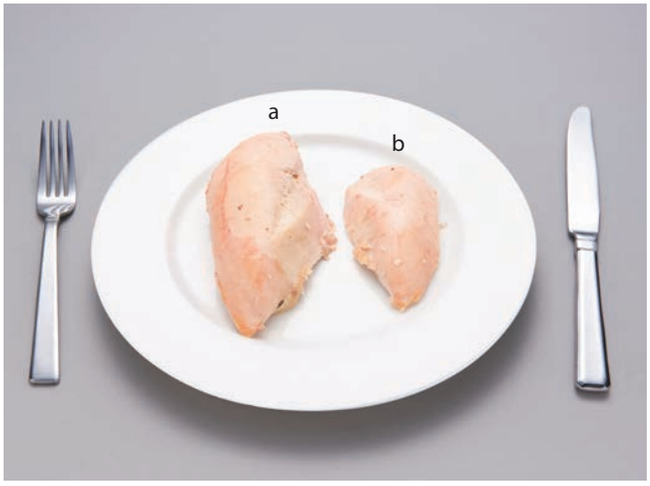
P078 – **3**



P079 – **1**



P079 – **2**



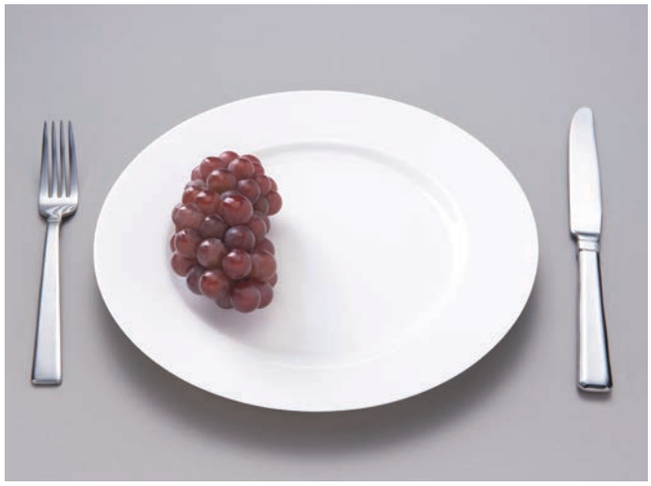
P079 – **3**

P080 – **1**

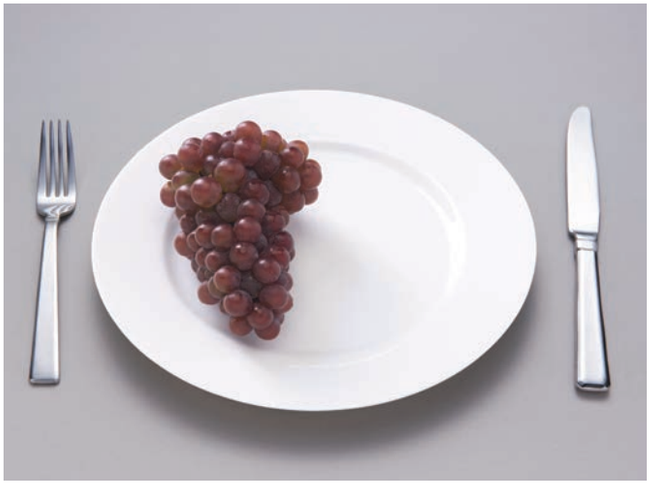
P080 – **2**

P081 GRAPE, TYPES

P081 – **1**

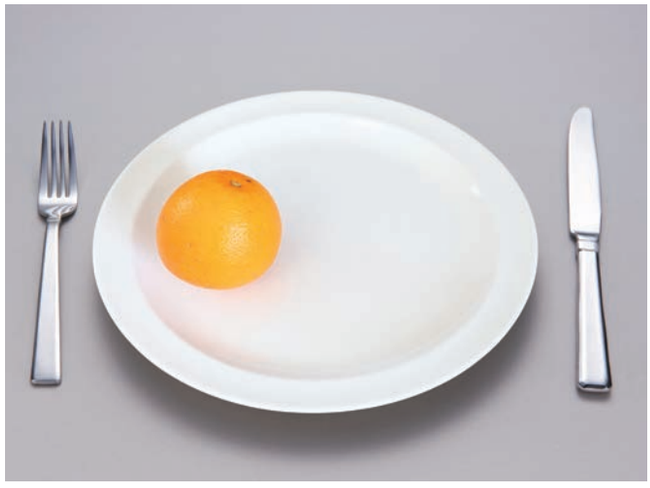


P081 – **2**

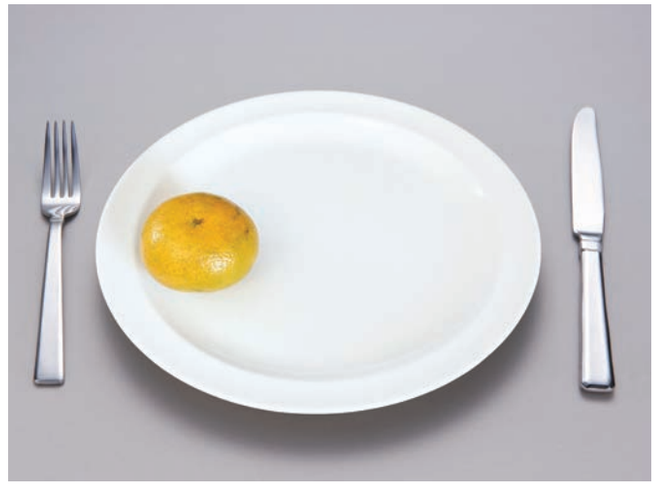


P081 – **3**

P082 ORANGE AND TANGERINE

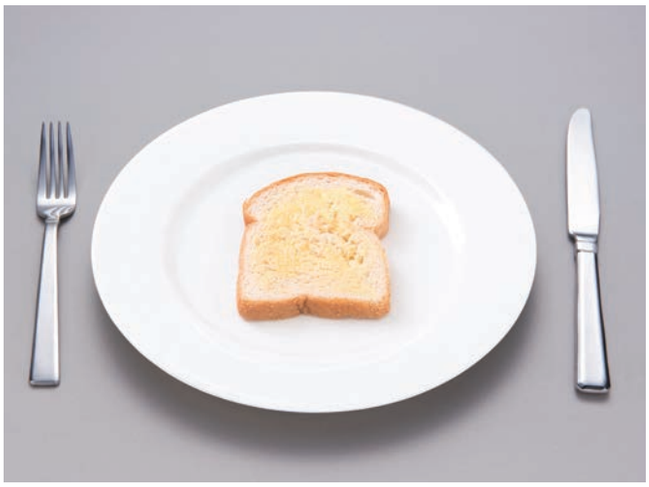


P082 – **1**

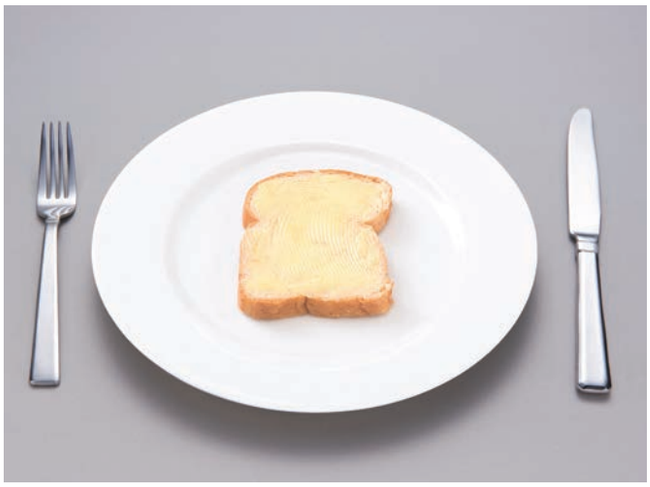


P082 – **2**

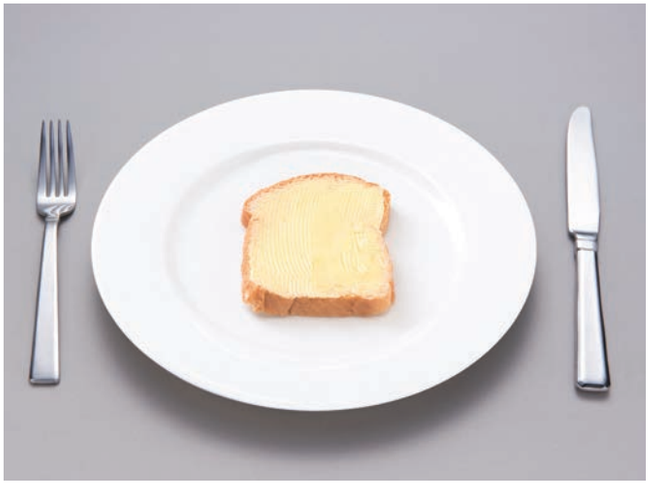
P083 MARGARINE / BUTTER ON BREAD



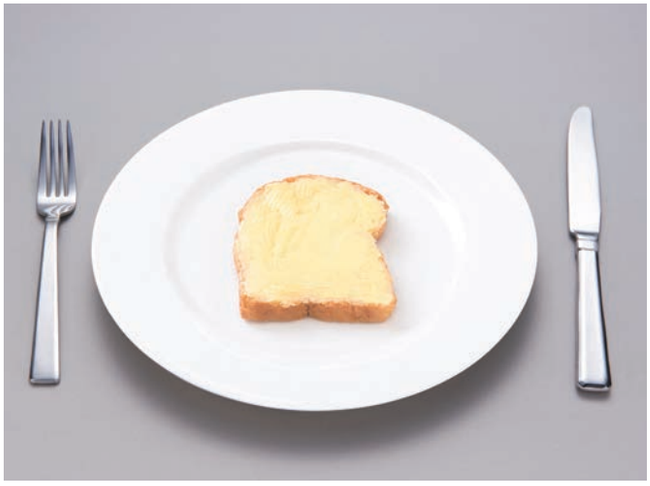
P083 – **1**



P083 – **2**

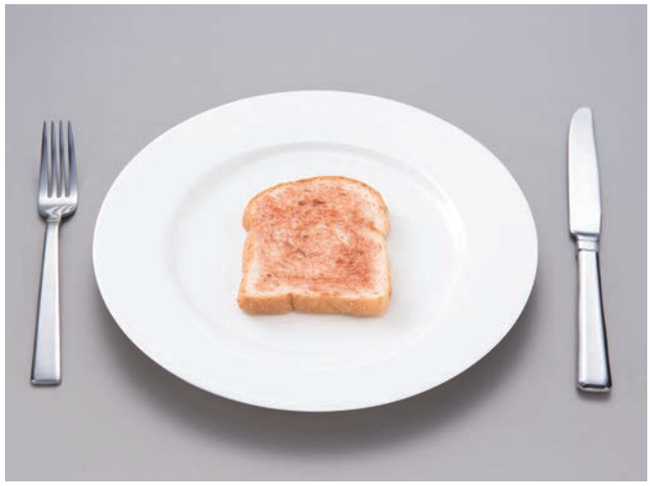


P083 – **3**

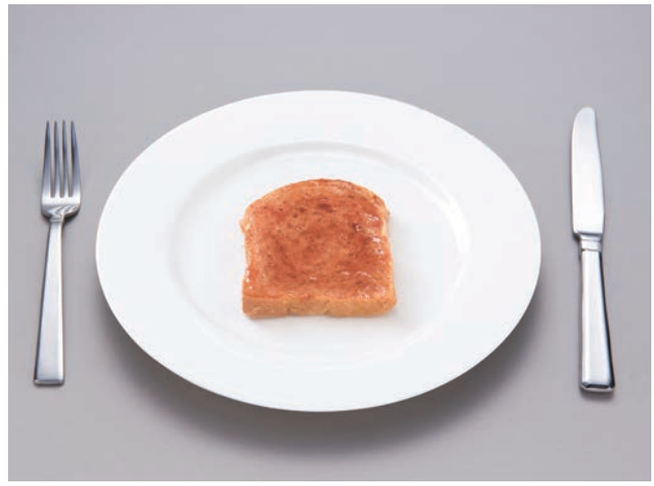


P083 – **4**

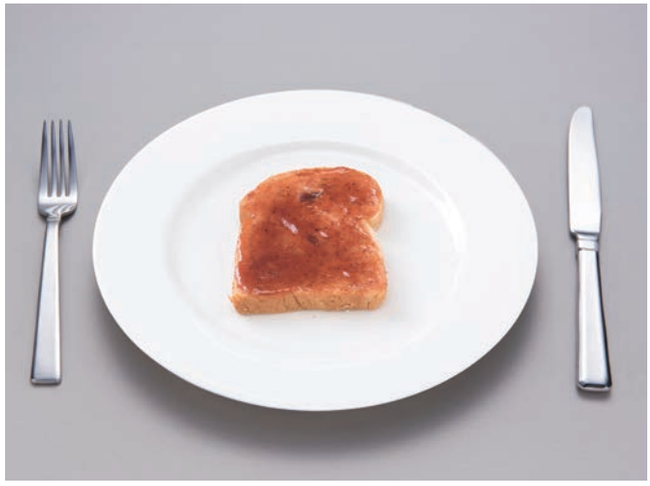
P084 JAM ON BREAD



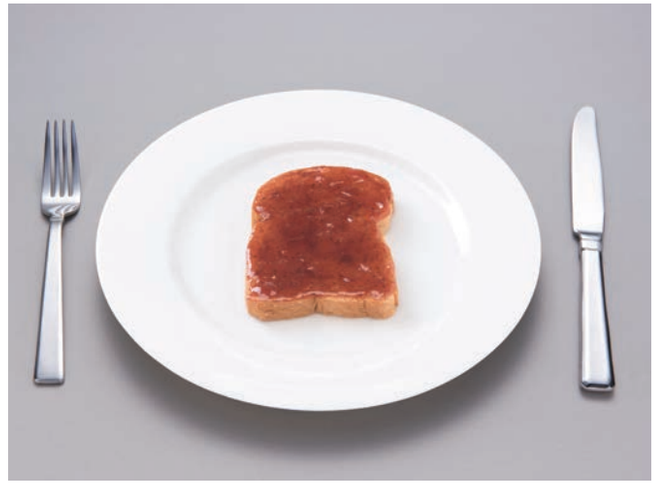
P084 – **1**



P081 – **2**



P084 – **3**



P084 – **4**

TECHNICAL SPECIFICATIONS OF PHOTOS

HOUSEHOLD MEASUREMENT VOLUMES

Code	Household Measurement	Volumes (ml)					
		⅛	¼	½	¾	⅞	1
M001	Glass, type 1		68	135	203	236	270
M002	Glass, type 2		73	145	218	254	290
M003	Glass, type 3	39	78	155	233	271	310
M004	Glass, type 4	39	78	155	233	271	310
M005	Glass, wine type	41	81	163	244	284	325
M006	Glass, champagne type	23	45	90	135	158	180
M007	Glass, type 5	25	50	100	150	175	200
M008	Mug, small	31	63	125	188	219	250
M009	Mug, medium	40	80	160	240	280	320
M010	Mug, large	49	99	198	296	346	395
M011	Disposable cup, very small	7	14	28	41	48	55
M012	Disposable cup, small	25	50	100	150	175	200
M013	Disposable cup, styrofoam	31	63	125	188	219	250
M014	Disposable cup, medium	39	78	155	233	271	310
M015	Disposable cup, large	63	125	250	375	438	500
M016	Bowl, small	—	63	125	188	—	250
M017	Bowl, medium	—	125	250	375	—	500
M018	Bowl, large	—	178	355	533	—	710
M019	Food packaging, styrofoam 1	—	—	—	—	—	430
M020	Food packaging, styrofoam 2	—	—	—	—	—	375
M021	Food packaging, styrofoam 3	—	—	—	—	—	650
M022	Food packaging, styrofoam 4	—	—	—	—	—	850
M023	Food packaging, styrofoam 5, parts A and B	—	—	—	—	—	110
M024	Food packaging, styrofoam 5, part C	—	—	—	—	—	327
M025	Soup packaging, styrofoam 1	—	—	—	—	—	475
M026	Soup packaging, styrofoam 2	—	—	—	—	—	600
M027	Soup packaging, styrofoam 3	—	—	—	—	—	950
M028	Spoon, type 1	—	—	—	—	—	1.8
M029	Spoon, type 2	—	—	—	—	—	2.8
M030	Spoon, type 3	—	—	—	—	—	8
M031	Spoon, type 4	—	—	—	—	—	10

HOUSEHOLD MEASUREMENT VOLUMES (continued)

Code	Household Measurement	Volumes (ml)					
		⅛	¼	½	¾	⅞	1
M032	Serving spoon, type 1	—	—	—	—	—	23
M033	Serving spoon, type 2	—	—	—	—	—	28
M034	Kitchen skimmer	—	—	—	—	—	—
M035	Ladle, small	—	—	—	—	—	100
M036	Ladle, medium	—	—	—	—	—	120
M037	Ladle, large	—	—	—	—	—	160

FOOD PORTIONS WEIGHTS

Code	Foods	Portion weight (g)*					
		1	2	3	4	5	6
P001	Cake, dark fruit	319	380	429	538	588	658
P002	Cornflakes with milk	68	147	217	310	—	—
P003	Cream of wheat	92	129	204	298	—	—
P004	Oatmeal porridge	66	171	301	443	—	—
P005	Pasta, spaghetti type, cooked	34	75	116	157	198	239
P006	Popcorn	1	3	6	13	19	43
P007	Rice, cooked	11	46	81	116	151	186
P008	Bread with cheese	42	95	155	210	—	—
P009	Turn corn / fungi, bowl	38	103	162	226	—	—
P010	Turn corn / fungi, plate	25	150	208	270	—	—
P011	Dasheen, cooked	46	118	227	484	518	560
P012	French fries	21	68	115	162	209	256
P013	Fried Plantain	27	48	91	140	—	—
P014	Mashed potato	30	65	101	137	173	217
P015	Potato Salad	74	158	212	319	—	—
P016	Sweet potato, cooked	65	93	193	261	—	—
P017	Yam, cooked	104	136	220	244	301	356
P018	Almonds	10	34	80	116	—	—
P019	Lentils, cooked	23	116	209	301	—	—
P020	Peanuts, boiled	23	42	64	78	—	—
P021	Peanuts, dry	16	34	53	75	—	—
P022	Pigeon peas, cooked	46	96	135	213	—	—
P023	Red beans, cooked	48	123	276	409	—	—

*** Grams are all presented in edible portions, except P072 and P081. In these cases, a conversion factor can be used to take into account the non-edible part. Suggested conversion factors: P072 (apples) = 0.80 and P081 (grapes) = 0.85**

FOOD PORTIONS WEIGHTS (continued)

Code	Foods	Portion weight (g)*					
		1	2	3	4	5	6
P024	Barbecued pork	175	277	358	589	—	—
P025	Conch chowder	123	217	393	529	950	—
P026	Caribbean fish soup	175	277	358	589	—	—
P027	Conch water	122	211	388	515	—	—
P028	Creole poached fish	100	186	220	242	330	489
P029	Fish in white sauce	124	215	314	454	—	—
P030	Saltfish, cooked	47	126	172	260	305	419
P031	Shrimp with skin, cooked	59	86	120	187	273	366
P032	Shrimp without skin, cooked	59	86	120	187	273	366
P033	Steamed fish with sauce	63	107	169	236	274	—
P034	Barbecued chicken	68	38	47	75	106	219
P035	Barbecued ribs	115	140	203	324	374	410
P036	Stewed chicken	48,5	105	121	189	228	359
P037	Mutton	65	87	198	301	405	650
P038	Goat water	118	271	441	486	950	—
P039	Liver, fried	27	54	69	97	170	—
P040	Oxtail, cooked	262	289	361	380	420	—
P041	Pig foot soup	162	293	476	550	—	—
P042	Meat, cooked	299	382	417	539	352	438
P043	Broccoli, cooked	8	42	75	108	142	175
P044	Cauliflower roots, cooked	22	36	83	174	—	—
P045	Celery stalks	32	53	78	95	—	—
P046	Cucumber	28	49	73	92	—	—
P047	Green / String beans, cooked	42	69	102	133	—	—
P048	Lettuce	4	12	19	27	—	—
P049	Mixed vegetables / California blend, cooked	33	66	131	203	—	—
P050	Okra, cooked	40	91	133	204	—	—
P051	Peas and carrots, cooked	24	45	103	—	—	—
P052	Pumpkin, cooked	57	129	189	260	—	—
P053	Spinach, cooked	13	33	52	72	—	—
P054	Tomato	18	85	152	220	—	—
P055	Avocado	15	60	76	133	—	—
P056	Breadfruit	52	94	119	199	213	258
P057	Breadfruit salad	53	142	197	300	351	392
P058	Cantaloupe	48	76	124	288	—	—
P059	Papaya, pieces	70	135	187	250	301	437
P060	Papaya, slices	139	256	390	486	554	614
P061	Pineapple	63	109	180	200	273	397
P062	Watermelon	23	73	124	174	225	275
P063	Chicken Soup	120	206	270	462	—	—

FOOD PORTIONS WEIGHTS (continued)

Code	Foods	Portion weight (g)*					
		1	2	3	4	5	6
P064	Dumplings / Coconut Dumplings	79	131	214	264	328	393
P065	Coleslaw	48	105	125	222	—	—
P066	Green Banana & Fish with Okra	82	164	172	433	—	—
P067	Pumpkin fritters	83	136	227	260	340	453
P068	Macaroni and cheese	304	376	407	426	483	594
P069	Macaroni pie	49	58	78	120	154	213
P070	Cook up / Chicken pelau	97	159	277	388	447	536
P071	Rice & Beans	52	105	167	202	280	429
P072	Apple, types	108	147	148	153	196	202
P073	Banana, types	34	76	82	133	130	—
P074	Biscuit, types	1a=10 1b=10 1c=7 1d=2 2a=8 2b=8 2c=9 3a=10 3b=4.3 3c=6.8 3d=12.8 3e=10 3f=10 3g=6 4a=7.5 4b=10 4c=7.5 4d=5.5 4e=7.5 4f=10 4g=5.5					
P075	Bologna, types	18	20	25	27	—	—
P076	Candy, types	1a=9.1 1b=5 1c=5.5 1d=2.4 1e=4 1f=7.7 1g=5.7; 2a=1.4 2b=2 2c=1.6 2d=2 2e=5 2f=7.7 2g=0.5; 3a=6.3 3b=30.4 3c=19.7 3d=10 3e=22.5 4a=4.1 4b=5.3 4c=5.1 4d=9.7 5a=3.8 5b=16.2 5c=5.4 5d=4.5 5e=1.4 5f=1.9 5g=3.9 6a=5 6b= 5.4 6c=5.6 6d=5 6e=4.5 6f=4 6g=5.9					
P077	Chocolate, types	1a=23 1b=24 1c=1 1d=56 1e=46 2a=6.3 2b=6.3 2c=25 2d=17.5 2e=25 2f=15 3a=11.3 3b=20 3c=32 3d=20 3e=20					
P078	Dumplings / Coconut dumplings, types	35	57	66	—	—	—
P079	Chicken parts	1a= 63 1b=123 2a= 226 2b=71 3a= 191 3b=85					
P080	Fish, types	340	85	—	—	—	—
P081	Grape, types	78	181	314	—	—	—
P082	Orange & tangerine	132	110	—	—	—	—
P083	Margarine / Butter on bread	3	13	23	33	—	—
P084	Jam on bread	6	18	29	40	—	—

REFERENCES

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THE MANUAL OF FOOD PORTION QUANTIFICATION: SAINT KITTS AND NEVIS WAS DEVELOPED TO ASSIST INDIVIDUALS TO RECOGNISE AND REPORT THEIR FOOD AND BEVERAGE INTAKES ACCURATELY DURING THE NATIONAL INDIVIDUAL FOOD CONSUMPTION SURVEY. THE MANUAL WAS DESIGNED TO ASSESS THE FOOD CONSUMPTION OF INDIVIDUALS AGED 18 TO 65 YEARS OLD USING THE 24-HOUR DIETARY RECALL METHOD. IT INCLUDES 121 PHOTOS OF SINGLE FOODS AND RECIPES, AS WELL AS HOUSEHOLD MEASUREMENTS (E.G. CUPS, SPOONS). THIS COVERS THE MEASUREMENT OF MOST FOOD GROUPS EITHER BY PORTIONS OR HOUSEHOLD MEASUREMENTS.

IT IS HOPED THAT THIS MANUAL WOULD ALSO BE USED IN NUTRITION EDUCATION PROGRAMS TO DEMONSTRATE THE IMPORTANCE OF ADEQUATE PORTION SIZES IN OBESITY CONTROL AND THE PREVENTION, WASTE MINIMIZATION AND MANAGEMENT OF FOOD COST. ADDITIONALLY, THE MANUAL COULD BE A USEFUL GUIDE FOR ORDERING AND PREPARING FOOD AND MEETING THE NUTRITION NEEDS OF THE POPULATION OF SAINT KITTS AND NEVIS, AS WELL AS THE CITIZENS OF THE OTHER CARIBBEAN COUNTRIES.

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