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## Noodles. . . Naturally: A Natural with Whole Grain Flours

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*Noodles...  
Naturally!*

*A natural with  
whole grain flours*

Agricultural Experiment Station  
South Dakota State University  
U.S. Department of Agriculture



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 by the Agricultural Experiment Station  
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 "Utilization of Cereal Grains and the Edible Legume Proteins  
 to Modify Nutritional Quality of Foods."

# Noodles ... Naturally!

*A natural way to use a traditional food source.*

Noodles are a food pasta made with flour and egg, of the character of macaroni and shaped in a typical ribbon form. "Macaroni" is a general term covering a wide variety of products including macaroni, spaghetti or egg noodles, plus a whole range of products of all shapes and sizes made by adding special ingredients or using special forming techniques. These products are usually called alimentary pastas.

The invention of macaroni occurred long ago. Historians believe the Chinese developed the food, but the Germans and Italians are credited with introducing it into Europe.

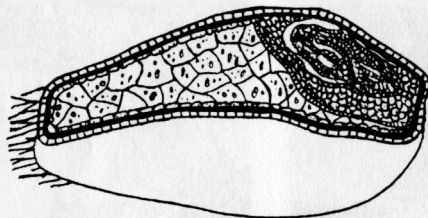
The first manufacturing process was the "cottage industry" or home production. Although this system has all but disappeared in our Western world, you may have vivid memories of your grandmother making noodles by hand. In the Eastern world, however, making noodles this way still accounts for a large share of the production.

*Nutrition plus, with natural, whole grain flour noodles.*

Commercial pasta products are usually made from Durum wheat flour. Your noodles can be made with a number of different flours, ranging from all-purpose white flour to whole grain flours from various cereal grains.

With so much emphasis on using natural foods and home processing, you may even want to grind the whole grains yourself. Used as a "special" ingredient, whole grain flour creates a flavorful product wherever it's used.

Whole grain wheat and triticale (wheat-rye cross) flours usually retain their original vitamins and minerals whether coarsely or finely ground. Most grains are similar in structure to the wheat kernel sketched in cross-section. (See Figure 1.)



**Figure 1.** The wheat kernel.

The outer bran layers and the germ (indicated by the darker swirl on the right) contain most of the vitamins and minerals. The germ, which is only 2 percent of the entire kernel, contains the highest grade protein and most of the fat. The endosperm (indicated on the left) is largely starch, with some protein that is different but complementary to the germ's protein. The bran and germ are undeniably important for their nutrition content and incomparable flavor.

Whole grain noodles are delectable, combine well with other foods and are more tender than regular commercial egg noodles. If you have a choice of wheat to use, the Hard Red Spring wheats have the best flavor. Triticale has a distinctive and delightful flavor all its own. Durum wheat makes a light-colored noodle.

*Make your noodles the natural, homemade way!*

Of all the dried pasta products, noodles give the least trouble in drying, and they are the easiest to make by hand or using small equipment. Noodle sheeters and cutters are available in all sizes, from small hand-operated types used by homemakers to large-scale, power-operated, factory-sized models.

The dough is simple. A stiff dough can be mixed with the hands until it's coherent, and then it is kneaded until the right consistency is attained for rolling the dough paper-thin with no holes. Or, the dough may be passed through a set of sheeting rolls a number of times until it's smooth.

After the sheets of dough have partially dried, they're rolled and sliced by hand, or run through a set of cutting rolls. Either way, thin strips of stiff dough are cut, and allowed to dry.

A basic recipe is:

50 gm. whole egg (1 medium to large egg)

80 gm. whole grain flour (½ c.)

3 gm. salt (½ tsp. scant)

2 tbsp. flour (variable)

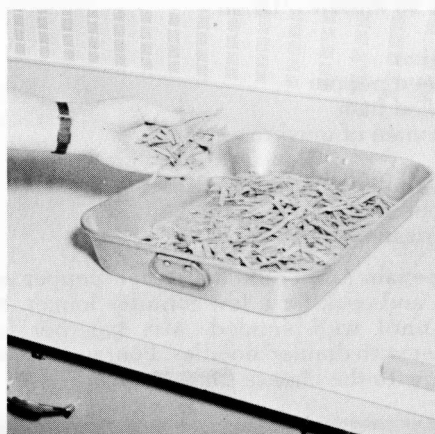
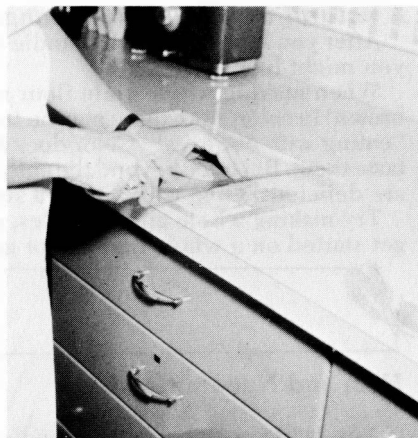


**Figure 2**



**Figure 3**

This small, counter-top machine will both sheet and cut your noodles. Figure 2 shows how the dough is rolled paper thin by passing it through the sheeting rolls, while Figure 3 shows how the noodles are cut by the machine.



Noodles may be rolled and cut by hand. This set of pictures shows the dough being rolled, sliced into strips, and the finished product after the noodles have been allowed to dry. (Note the darker color of the noodles when using whole grain flour s.)

Combine flour and salt, make a well, drop in egg (or beat egg slightly with salt then stir in the flour). Mix with a fork, then fingers, until all the flour is incorporated. Knead a minute or two until smooth and no longer sticky. Roll dough on a lightly floured board until very thin (less than  $\frac{1}{8}$  inch or about 2 centimeters). Let rest for about one hour. Roll up dough and cut  $\frac{1}{4}$  inch wide strips or any desired width. Shake the strips free of folds and let dry for later use or use immediately. This recipe makes 113 gm. (4 oz.) of dried noodles or 3 cups of cooked noodles.

When using a noodle machine, the kneading is done on the sheeting rolls. Let each sheet of noodle rest or dry for about an hour before cutting into strips. Then dry or use as previously indicated.

Different varieties of wheat and triticale flours have different moisture contents, so there will be a difference in the amount of flour used for kneading and rolling. The dough should not be sticky.



*A natural way to create “change-of-pace” meals.*

After you have learned to handle the dough, there are other noodle recipes you might like to try.

When making whole grain flour noodles, remember they'll be dark (tan to brown) in color. And, there may be some opposition since we are accustomed to “eating with our eyes!” Color does affect our acceptability of foods before we taste them. But once beyond the color, homemade noodles of whole grain flours are delicious. Give your family a surprise!

Try making whole grain noodles, and use the following recipes to help you get started on a whole new era of good eating!



### Ham and Noodle Casserole

4 servings

4 oz. (113 gm.) whole grain noodles. Cook in boiling salted water ( $\frac{1}{2}$  tsp. salt per 1 qt. water) for 10 minutes. Drain.

2 tbsp. butter

$\frac{1}{4}$  c. chopped onion

$\frac{1}{4}$  c. chopped green pepper

$1\frac{1}{4}$  c. cubed cooked ham

1 can ( $10\frac{1}{2}$  oz.) cream of mushroom soup

$\frac{1}{2}$  c. milk

1 tbsp. chopped pimiento

Dash black pepper

$\frac{1}{2}$  c. grated American cheese

Melt butter in saucepan. Add onion and green pepper and cook for about 5 minutes. Add ham and cook for a few minutes longer. Heat soup and milk together, stirring until well-blended. Mix together ham mixture, soup, pimiento and pepper with drained noodles. Pour mixture into a greased  $1\frac{1}{2}$  qt. casserole. Sprinkle with the cheese. Bake in  $375^{\circ}\text{F}$ . oven for 20 minutes.



Ham and Noodle Casserole

## Lamb Casserole

4 servings

3 tbsp. olive oil  
½ eggplant (peeled and cubed)  
¼ c. diced celery  
4 oz. (113 gm.) whole grain noodles. Cook in boiling salted water (½ tsp. salt per qt. water) for 10 minutes. Drain.  
8 oz. (227 gm.) ground lamb  
½ tsp. salt  
Dash black pepper  
½ tsp. oregano  
⅛ tsp. cinnamon  
1 recipe tomato sauce (see below)  
4 oz. mozzarella cheese (thickly sliced)

Heat oil in large skillet. Add eggplant - saute until lightly browned. Combine eggplant, celery, and cooked noodles in large bowl. Cook lamb in skillet until lightly brown. Season with salt, pepper, oregano and cinnamon. Add to noodle mixture. Stir in tomato sauce - check seasoning. Turn into 1½ - 2 qt. deep casserole. Top with mozzarella cheese and bake 30 minutes.

## Tomato Sauce

2 tbsp. olive oil  
½ onion, finely chopped  
½ clove garlic, finely chopped  
1 lb. 6 oz. Italian plums (canned and drained)  
3 oz. tomato paste  
1 bay leaf  
½ tsp. basil  
¼ tsp. thyme  
¼ tsp. oregano

Heat oil, saute garlic and onion until tender. Add plums, tomato paste, salt, pepper, bay leaf and basil. Bring to a boil - simmer 20 minutes. Add thyme and oregano - simmer 5 minutes more.



## Hamburger Corn Hot Dish

6-8 servings

2 lbs. (908 gm.) ground beef  
1 c. chopped onion  
2 c. whole kernel corn  
1 can cream of mushroom soup  
1 can cream of chicken soup  
1 c. sour cream  
1 tsp. salt  
¼ tsp. pepper  
¼ c. chopped pimiento  
4 oz. (113 gm.) whole grain noodles. Cook in boiling salted water (½ tsp. salt per 1 qt. water) for 10 minutes. Drain.  
1 c. bread crumbs  
3 tbsp. butter, melted

Brown meat. Add remaining ingredients, except crumbs and butter. Mix well. Place in large casserole. Top with mixture of crumbs and butter. Bake 350°F. for 30 minutes.

NOTE: Do not overbake - sour cream will make casserole bitter.



## Baked Tuna and Noodles

4-6 servings

4 oz. whole grain noodles. Cook in salted water ( $\frac{1}{2}$  tsp. per 1 qt. water) for 10 minutes. Drain. Pour into a greased 2 qt. casserole or flat baking dish.

- 7 oz. can tuna
- 1 c. milk
- Dash black pepper
- 1 can cream of celery soup
- 1 c. fine bread crumbs
- $\frac{1}{2}$  tbsp. melted butter

Flake tuna and prepare buttered bread crumbs while noodles are cooking. Arrange flaked tuna on top of the noodles and sprinkle with pepper. Mix soup and milk together and pour over the tuna and noodles. Cover with buttered crumbs. Bake in a 375°F. oven for 25 to 30 minutes or until crumbs are golden brown.

## Baked Hamburger and Noodles

- 1 lb. hamburger
- $\frac{1}{2}$  tsp. salt

Add salt to hamburger and brown. Proceed as above.

## Baked Fish and Noodles

Any flaked cooked fish may be used in place of tuna.



## Tuna Noodle Casserole

4-6 servings

- 2-6 $\frac{1}{2}$  oz. cans tuna, drained and flaked
- 4 oz. (113 gm.) whole grain noodles. Cook in salted water ( $\frac{1}{2}$  tsp. salt per 1 qt. water) for 10 minutes. Drain.
- $\frac{1}{4}$  c. (5 oz.) sharp Cheddar cheese, coarsely shredded (divided)
- 2 c. cornflakes (divided)
- 1 c. milk
- 2 eggs, slightly beaten
- $\frac{1}{2}$  c. chopped green pepper
- 1 tbsp. freeze-dried snipped chives
- 1 tsp. salt
- $\frac{1}{4}$  tsp. pepper
- 2 tbsp. melted butter
- $\frac{1}{4}$  tsp. paprika

Combine tuna, noodles, and 1 c. cheese,  $\frac{1}{2}$  c. cornflakes, milk, eggs, green pepper, chives, salt and pepper. Spoon into shallow baking dish ( $1\frac{1}{2}$  qt.). Mix  $\frac{1}{2}$  c. crushed cornflakes,  $\frac{1}{4}$  c. remaining cheese, melted butter, and paprika. Sprinkle over top of tuna mixture. Bake uncovered, 40 to 45 minutes in 350°F. oven, until crumbs are lightly browned.

## Fish Noodle Casserole

4-6 servings

Any flaked cooked fish may be used in place of tuna.

## Curried Lamb and Noodles

6 servings

- 3 tbsp. oil
- 1 lb. ground lamb (454 gm.) or 3 c. cooked lamb, cut in cubes
- ½ c. chopped onion
- ½ c. tart apple
- 1 clove garlic, minced
- ½ tsp. celery seed (optional)
- 1½ tsp. curry powder
- ⅛ tsp. ginger
- 1 tsp. salt
- ¼ tsp. pepper
- 5 to 6 drops tabasco sauce
- 1 can (10 oz.) tomato puree
- 4 oz. (113 gm.) whole grain flour noodles
- 1 can consommé plus 1 can water

Heat oil (use less oil if ground lamb appears fat). Brown lamb, onion, apple and garlic in oil until onion is golden brown. Add seasonings and puree. Blend well and heat thoroughly. Cook noodles 10 minutes in diluted consommé. Drain, pour into heated serving dish. Spoon curried lamb over the noodles and garnish with a sprig of parsley.



Curried Lamb and Noodles

## Frankfurter and Noodle Casserole

4-6 servings

- 1 tbsp. butter
- ⅓ c. thinly sliced onion
- 2 cans condensed Cheddar cheese soup, undiluted
- ½ c. milk
- 2 tsp. prepared spicy mustard
- ½ tsp. prepared horseradish
- 2 tbsp. chopped pimiento
- 8 oz. (227 gm.) whole grain noodles. Cook in salted water (½ tsp. per qt. of water) for 10 minutes. Drain.
- 1 lb. (454 gm.) frankfurters

Melt butter in small saucepan over moderate heat, add onion and cook until crisp-tender. In a large bowl, mix together cooked onion, cheese soup, milk, mustard, horseradish, pimiento and noodles. Turn into a shallow, rectangular 2 qt. casserole. Arrange frankfurters on top. Bake uncovered, 20 to 25 minutes at 400°F., or until noodle mix is bubbly hot and frankfurters are lightly browned.

## Beef Delight

4-6 servings

- 1½ lbs. (681 gm.) beef steak, 1½ inches thick
- Sifted fine bread crumbs
- 1 egg
- 1 large onion, sliced
- ¾ c. butter (divided)
- 1 tsp. paprika
- 1½ tsp. salt
- Dash black pepper
- 1 c. milk
- 1 c. sour cream
- 4 oz. (113 gm.) whole grain noodles
- ½ c. slivered almonds (optional)

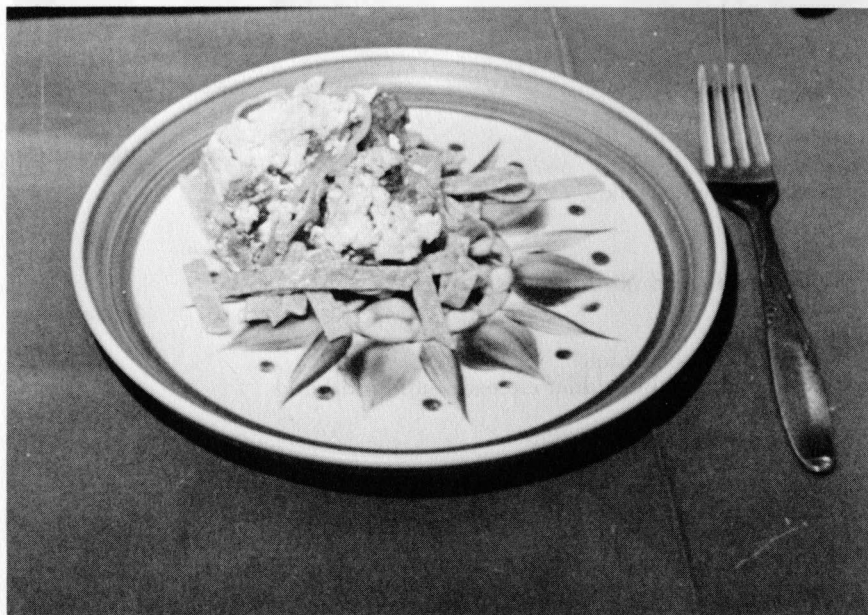
Cut beef into serving pieces. Beat the egg with one tablespoon water. Dip beef pieces in crumbs, beaten egg, and again in crumbs. Melt ¼ c. butter in a skillet or heavy pot and saute onions until they turn slightly yellow. Remove onions from skillet. Brown beef in skillet on both sides. Remove beef and place in 2 qt. casserole. Add paprika, salt, pepper, and the softened onions. Pour milk and sour cream over beef. Cover tightly and bake in preheated 325°F. oven for 1½ hours.

Cook noodles in boiling salted water (½ tsp. salt per qt. water) for 10 minutes. Drain. Stir in ½ c. butter. Place in heated serving dish. Spoon beef mixture over noodles. Sprinkle almonds on top.

## Veal Steak Delight

4-6 servings

Veal steak may be used in place of beef.



Beef Delight



## Noodles and Beef Baked in Cheese Sauce

4 servings

8 oz. (227 gm.) whole grain noodles. Cook in boiling salted water ( $\frac{1}{2}$  tsp. salt per qt. water) for 10 minutes. Drain.

2 tbsp. butter

4 tbsp. flour

2 c. milk

1 tsp. salt

Dash black pepper

$1\frac{1}{2}$  c. grated Swiss cheese

2 c. cubed cooked beef

2 tomatoes, skinned, seeded, and cut in pieces

8 oz. mushrooms

$\frac{1}{2}$  c. bread crumbs

2 tbsp. butter

Heat 2 tbsp. butter in saucepan, add flour, and cook over low heat until almost dry. Add milk, a little at a time, stirring constantly until smooth and thickened. Season with salt and pepper. Stir in grated cheese. Place cooked noodles in deep casserole ( $2\frac{1}{2}$  qt.) with beef, tomatoes, and mushrooms. Add cheese sauce and stir to mix with other ingredients. Sprinkle top with bread crumbs - dot with butter. Bake in 350°F. oven 35 to 45 minutes, or until brown and crusty on top.



Noodles used as a dessert dish? Splendid, delightful, delicious, tremendous, excellent and tasty were just a few of the words used to describe this noodle pudding with a custard-type base and raisin sauce. It does not make any difference which whole grain flour is used in the noodles; each had its own delightful flavor and appearance.

## Noodle Pudding with Raisin-Nut Sauce

6 servings

2 c. cooked whole grain noodles

3 eggs

2 c. milk

$\frac{2}{3}$  c. sugar

$\frac{1}{4}$  tsp. salt

$\frac{1}{2}$  tsp. cinnamon

Dash of nutmeg (optional)

Drain noodles and cut into small pieces. Place cooked noodles in buttered 8-inch square baking pan or dish. Beat eggs, add milk, sugar, salt and cinnamon. Pour over noodles and gently mix. Sprinkle with nutmeg, if desired. Bake in preheated oven 300°F. (149°C.) for 60-70 minutes, or until knife comes out clean. Cut pudding into squares and serve hot or cold with warm raisin sauce.

### Raisin-Nut Sauce

$1\frac{1}{2}$  c. water

$\frac{1}{2}$  tsp. orange peel

$\frac{1}{2}$  c. raisins

$\frac{1}{4}$  c. sugar

2 tbsp. butter

$\frac{1}{4}$  tsp. salt

2 tbsp. cornstarch

3 tbsp. cold water

$\frac{1}{3}$  c. chopped walnuts

$\frac{1}{2}$  tsp. rum flavoring

$\frac{1}{2}$  tsp. vanilla

Measure water into a small saucepan, add orange peel and bring to boil. Remove from heat, add raisins and let stand 10 minutes. Add sugar, butter and salt; cook over medium heat till boiling. Combine cornstarch and cold water; stir into boiling mixture and cook until thickened. Remove from heat. (At this point the sauce may be covered and left to sit until serving time, then reheated.) Stir in walnuts and flavorings. Serve warm.



# Hints and Helps

## Abbreviations:

c. - cup  
tbsp. - tablespoon  
tsp. - teaspoon  
lb. - pound  
oz. - ounce  
med. - medium  
pt. - pint

**Cubed** - to cut into small ( $\frac{1}{4}$  to  $\frac{1}{2}$  inch) more or less cubical pieces.

**Chopped** - to cut into small pieces in a random manner.

**Diced** - to cut into small more or less cubical pieces,  $\frac{1}{8}$  to  $\frac{1}{4}$  inch. Results in finer than cubed food and coarser than minced.

**Saute** - to fry in shallow fat until light brown.

**Temperatures** - Common temperatures used in cooking - Celsius (Centigrade), Fahrenheit.

Celsius (°C.)	Fahrenheit (°F.)
24	75
66	150
100	212
135	275
149	300
163	325
177	350
190	375
204	400
218	425

## Weights:

1 lb. - 454 grams  
8 oz. - 227 grams  
4 oz. - 113 grams

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