

Cooking Methods and Vitamin Loss

BROOKINGS, S.D. - Cooking methods can limit vitamin intake thus impacting the health value of certain foods essential to human metabolism.

"Cooking foods can reduce the vitamin content because some vitamins are susceptible to loss from heat, air, water, and light," said Biyi Chen, SDSU Graduate Student in Nutrition and Exercise Science.

Chen explained that currently, 13 vitamins are found and divided into two categories: four fat-soluble which are A, D, E, and K; and nine water-soluble, eight of which are B vitamins and vitamin C.

"Water-soluble vitamins, especially most of the B vitamins and vitamin C, leach into cooking water; as

well as fat-soluble vitamins; including vitamins A, D and E, leach into cooking oils," Chen said. "Only two vitamins, K and B-3, are stable enough to hold up well during cooking."

Best cooking methods to preserve vitamins

Cooking methods that use only small amounts of fat or water and don't require long heat exposure preserve nutrients best, Chen explained. "The type of food preparation influences the loss of vitamins. Choose the best cooking methods to help retain the vitamins of food," Chen said.

Table 1 shows vitamin loss by different cooking methods.

Cooking methods
Vitamin loss in %
(C, B1, B2, B6)

Boiling	35 - 60
Poaching	Less than boiling
Steaming	10 - 25
Pressure cooking	5 - 10
Microwave cooking	5 - 25
Roasting	10 - 47
Stewing/Braising	10 - 12
Grilling	10 - 12
Baking	10 - 12
Frying	7 - 10
Moist-Heat Cooking Methods:	
Boiling and poaching will	cause a great loss of water-soluble vitamins, such as folate, vitamin B1 and C, so

Chen recommends steaming and microwave cooking as good methods to minimize the loss of vitamins.

"Steam can transfer more heat at the same temperature, so the food cooks faster and fewer nutrients are lost," Chen said. "Stewing/braising can also help with preserving the vitamins, but heat-sensitive vitamins are partially destroyed."

Chen added that pressure cooking is comparable with steaming and stewing.

Dry-Heat Cooking Methods

With dry-heat cooking methods, heat can be transferred through air or fat. "This method is suitable for foods rich in proteins and where a crust is desired; however, heat-sensitive vitamins are partially destroyed

during roasting, grilling, and baking," Chen said.

Fry-Cooking Methods

Chen said that correct frying of vegetables preserves vitamins better than boiling or steaming. "Frying does increase the amount of fat and energy," Chen said.

The advantage of frying cooking includes: no loss of water-soluble vitamins, only a small amount of heat-sensitive vitamins destroyed, and possible increasing of vitamin E based on oil used for cooking.

Tips to help retain the vitamins of food during cooking

* Wash vegetables whole and before peeling under running water.

* Peel thinly or cook with skin on, and cut into large pieces.

* Raw vegetables and fruit salads: add a little lemon juice or vinegar to slow down vitamin C loss.

* Use the smallest amount of water necessary, and cook with the lid on.

* Serve immediately. Keeping food warm causes a vitamin C loss of 4-17% in one hour and 7-34% in two hours.

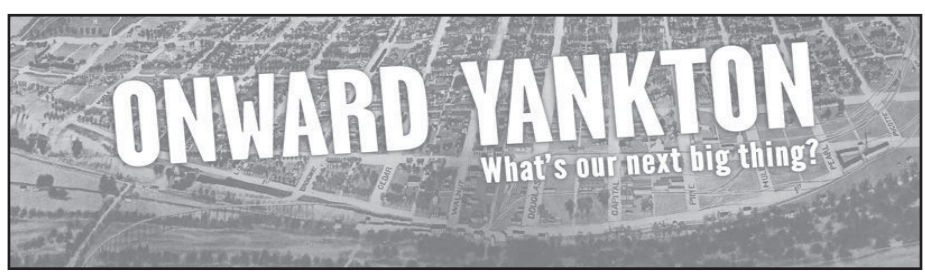
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A Proud Salute to our community *Guardians* Onward Yankton



After a 100 day search for Yankton's next BIG IDEA, a winner is found!



Jacob Fokken, a Yankton native and fifth grade teacher at Laura B. Anderson Elementary in Sioux Falls, was named the winner of Onward Yankton's search for the community's next big idea.

Fokken's plan to make Yankton the Capital of Entrepreneurship calls for establishing a creative district in Yankton's historic downtown, along with a community-wide culture that identifies, educates and fosters entrepreneurship. He suggests strong partnerships with local education entities, especially Mount Marty College.

Fokken received a plaque and a \$10,000 prize at a ceremony held Monday at the Meridian Bridge Plaza in Yankton.

"Every time I took my dog to the dog park and I saw somebody, I'd say, 'What do you know about Yankton?'" Fokken said of formulating his idea. "I'd ask what their favorite parts were, and what they thought could be different. I knew what I wanted to see, but I tried to make it as comprehensive and yet as specific as possible."

"Yankton's my hometown. I really care a lot about Yankton. The biggest thing is that I thought something could actually happen. I felt I could directly be a part of the place where I grew up."

More than 500 ideas were submitted during Onward Yankton's 100-day search, which was launched in April. The committee narrowed the field to 15 ideas before six finalists were announced on Aug. 4. They

presented their ideas at a public forum on Aug. 31.

The Onward Yankton committee has already held meetings with potential stakeholders in an effort to implement Fokken's plan. Anyone interested in helping should contact any of the Onward volunteers. Several committees are being established to develop an action plan.

Beth Rye announced the winner. She said Fokken's idea encapsulates many of the finalists' ideas by focusing on the downtown, jobs, quality of life and education.

Onward Yankton volunteer R.J. Rieger said it's important that everyone has a clear idea of the plan in order to make it successful. "Jacob's idea revolves around entrepreneurship," Rieger said. "That's a word that means a lot of things to a lot of people. An entrepreneur to Onward Yankton means anyone with a creative idea or plan that makes our city better, and the gumption to make it happen. It could be an individual, a family or a company. It could be a church, a school or a non-profit organization. The word 'entrepreneur' is usually associated with business startups. We want it to be that and more."

"We want Yankton to be the friendliest place in the world for people with new ideas, and we're committed to creating that environment in our beautiful downtown," Rieger said.

**Thanks to everyone who participated in Onward Yankton!
Now let's make this BIG IDEA happen!**

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