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VITAMIN

UNITED NATIONS DECADE OF
ACTION ON NUTRITION
2016-2025

Food and Agriculture Organization of the United Nations

World Health Organization

Food and Agriculture Organization of the United Nations

World Health Organization

UNITED NATIONS DECADE OF ACTION ON NUTRITION

2016-2025

SUSTAINABLE DEVELOPMENT GOALS

The April 2016 proclamation of the United Nations Decade of Action on Nutrition (2016–2025)

provides a unique opportunity for stakeholders to strengthen joint efforts towards eradicating hunger and preventing all forms of malnutrition worldwide.

Governments, inter-governmental organizations, civil society, the private sector, academia and other actors are invited to make their commitments to advancing the global nutrition agenda, within the 2030 Global Agenda for Sustainable Development and framed by the Rome Declaration on Nutrition. Implementation of the Decade is co-convened by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO), in collaboration with the World Food Programme (WFP), the International Fund for Agricultural Development (IFAD) and the United Nations Children's Fund (UNICEF).

Nutrition continues to be a central health, economic and sustainable development challenge for every region on the planet. If executed thoughtfully, catalysing the efforts, resources and voice of the vast nutrition community, the UN Decade of Action on Nutrition has the potential to propagate a society-wide movement, leading to national policy change and ultimately to the end of all forms of malnutrition.

Nutrition challenges faced by Member States are complex, and their solutions require strong and sustained political leadership. As an umbrella for consolidating and aligning nutrition actions, the Decade will facilitate policy processes across the areas identified in the Second International Conference on Nutrition (ICN2) Framework for Action for the commitments of the Rome Declaration on Nutrition. Specifically, it seeks to support and catalyse nutrition actions and investments by helping countries attain specific, measurable, achievable, relevant and time-bound (SMART) commitments by 2025. By addressing all forms of malnutrition in all population groups, from stunting, wasting and micronutrient deficiencies to overweight, obesity and nutrition-related noncommunicable diseases (NCD), actions under the Decade will lead the world to meeting the World Health Assembly global nutrition targets and the global nutrition-related NCD targets.

The UN Decade of Action on Nutrition is an unprecedented opportunity for achieving nutrition impact at scale, with a collective vision of a healthier, more sustainable future. UN-wide, convened by FAO and WHO, it ensures the highest level of credibility and accountability. Its fixed time frame provides energy and focus.

The Decade offers a robust, country-driven programme of work for all nutrition stakeholders, including UN bodies and other entities such as the Committee on World Food Security and the UN Standing Committee on Nutrition, civil society, the private sector and academia.

IMPLEMENTING THE UN DECADE OF ACTION ON NUTRITION (2016–2025)

Three groups of catalytic mechanisms will support progress on nutrition commitments across the Decade:

Evidence-informed advocacy

Means and methods of generating evidence and strengthening data on effective nutrition interventions and policies, sharing guidelines and best practices and communicating key messages among relevant stakeholders.

Convening platforms

Conferences, summits and forums to help develop and drive the Decade's work programme, to provide the opportunity to recognize successes and voice challenges and obstacles, to facilitate collaboration among governments with common policy actions and commitments, and to encourage collective work across sectors and constituencies.

Accountability mechanisms

Monitoring and check-in opportunities to assess progress using mechanisms both convened by and independent of FAO and WHO.

Three stages of policy achievement by Member States frame the outcomes of the Decade:

Set

Identify and commit to policies and actions that are tailored to the national context and based on existing national and regional plans, against a fixed timeline; build capacity within and among stakeholder groups to ensure an enabling environment for policy.

Track

Undertake systematic monitoring of policy-setting and implementation to ensure that actions are progressing as planned, are delivering outcomes against the fixed timeline; adjust as necessary.

Achieve

Register and evaluate the achievement of national SMART nutrition policy commitments, including the demonstration of their effectiveness.

The UN Decade of Action on Nutrition is:
A UN-wide, FAO and WHO-convened, Member State-driven global collective effort to set, track and achieve SMART policy commitments to end all forms of malnutrition worldwide within the Sustainable Development Agenda and framed by the Rome Declaration on Nutrition.

DECADE PILLARS FOR NUTRITION ACTION

The Decade calls all Member States to act across six pillars for nutrition action based on the commitments of the Rome Declaration on Nutrition and the recommendations included in the ICN2 Framework for Action:

- Sustainable food systems for healthy diets
- Aligned health systems providing universal coverage of essential nutrition actions
- Social protection and nutrition education
- Trade and investment for improved nutrition
- Enabling food and breastfeeding environments
- Review, strengthen and promote nutrition governance and accountability

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Food and Agriculture Organization of the United Nations

World Health Organization

UNITED NATIONS DECADE OF ACTION ON NUTRITION

2016-2025

FREQUENTLY ASKED QUESTIONS

SUSTAINABLE DEVELOPMENT GOALS

Proclaiming the years 2016 to 2025 as the United Nations (UN) Decade of Action on Nutrition, the UN General Assembly in April 2016 committed Member States to ten years of sustained and coherent nutrition action. The primary objective of the Decade is to increase nutrition investments and implement policies and programmes to improve food security and nutrition within the framework agreed at the Second International Conference on Nutrition (ICN2) held in November 2014.

While proclaiming the Decade, the General Assembly endorsed the two outcome documents of the ICN2: the Rome Declaration on Nutrition and its Framework for Action. These documents provide the core elements and the guidance from which national policies and programmes can be constituted.

The UN General Assembly also reaffirmed its commitment under the 2030 Agenda for Sustainable Development to "end malnutrition in all its forms".

What is the UN Decade of Action on Nutrition?

The UN Decade of Action on Nutrition, under the normative framework of ICN2 and the 2030 Agenda for Sustainable Development, marks a new ambition and direction in global nutrition action: to eradicate hunger, end malnutrition in all its forms (undernutrition, micronutrient deficiencies, overweight or obesity) and reduce the burden of diet-related noncommunicable diseases in all age groups.

The Decade will provide an umbrella for all relevant stakeholders voluntarily to consolidate and align nutrition actions across different sectors and facilitate policy processes across the areas identified in the ICN2 outcome documents.

The Decade is an unprecedented opportunity for achieving nutrition impact at scale, with a collective vision of a healthier and more sustainable future.

The vision of the Decade is of a world where all nutrition champions coordinate action and strengthen collaboration so that all people at all times and at all stages of life have access to affordable, diversified, safe and healthy diets.

The Decade will work for a 10-year period within existing structures and available resources.

The UN Decade of Action on Nutrition is not an initiative; it is not a programme nor a project.

Why do we need a UN Decade of Action on Nutrition?

Ending hunger and all forms of malnutrition is among the most urgent and pervasive development challenges. Most countries are burdened by more than one form of malnutrition or diet-related noncommunicable diseases. These forms may co-exist within the same country, community, household or individual.

Many families cannot afford enough nutrient-rich foods, like fresh fruit and vegetables, legumes, meat and milk, while foods and drinks high in fat, sugar or salt are often cheap and readily available.

The world is producing more than enough food to feed everyone. Yet one-third of food produced for human consumption is lost or wasted globally throughout the supply chain, from initial agricultural production to final individual food consumption.

Prioritized and accelerated action-oriented efforts within the Decade will lead the world to meeting the World Health Assembly six global nutrition targets 2025 and the global diet-related noncommunicable diseases targets, and the many additional nutrition-relevant targets in the 2030 Agenda for Sustainable Development.

Who is involved in the UN Decade of Action on Nutrition?

The UN Decade of Action on Nutrition belongs to everyone and aims to involve all countries, regardless of their income, the nature of their malnutrition challenges and the characteristics of their food and health systems.

The Decade is a global collective effort driven by UN Members States and co-convened by the Food and Agriculture Organization of the United Nations (FAO) and the World Health Organization (WHO), in collaboration with the World Food Programme (WFP), the International Fund for Agriculture Development (IFAD) and the United Nations Children's Fund (UNICEF).

FAO and WHO, as co-convenors, will:

- promote policy dialogue at all levels;
- develop tools and instruments to support the implementation of programmes, policies, partnerships and investment; and
- track and report on progress toward achieving global goals and country-specific commitments for action on nutrition.

National governments and other relevant stakeholders, including international, intergovernmental and regional organizations, parliamentarians, civil society, academia and private sector all have an active role to play in the implementation of the Decade.

In particular, the Committee on World Food Security (CFS) provides a vital multi-stakeholder platform where countries and their many partners can discuss progress, exchange lessons and experiences and agree on coherent and consistent food security and nutrition policies. The UN System Standing Committee on Nutrition (UNSCN) serves as a coordinating mechanism for the UN bodies and international organizations involved.

How is the work programme for the UN Decade of Action on Nutrition being prepared and implemented?

The work programme of the Decade will be a global programme but with action at the country level.

Setting out the work programme of the Decade will be an inclusive, continuous, and collaborative process, building upon and connecting the independent initiatives of governments and their many partners.

Advocating for commitments by all stakeholders to implement specific interventions, policies, programmes and investments for action on nutrition in all relevant sectors will be crucial in order to bring about a real and meaningful system change to end all forms of malnutrition. The Decade will provide a standardized global framework for making, reporting and monitoring progress and for tracking results.

All stakeholders are invited to submit inputs to the work programme of the Decade, taking as reference the six pillars identified in the ICN2 Framework for Action. These six pillars are:

- sustainable food systems for healthy diets;
- aligned health systems providing universal coverage of essential nutrition actions;
- social protection and nutrition education;
- trade and investment for improved nutrition;
- enabling food and breastfeeding environments; and
- review, strengthen and promote nutrition governance and accountability.

Stakeholders are encouraged to set, track and achieve specific, measurable, achievable, relevant and time-bound (SMART) commitments. This will help all stakeholders understand what action is intended and improve tracking.

Three groups of catalytic mechanisms will support the progress on nutrition commitments across the Decade: evidence-informed advocacy, convening platforms and accountability mechanisms.

Are there specific events on the UN Decade of Action on Nutrition and/ or key opportunities to share and discuss progress towards ending all forms of malnutrition?

FAO and WHO will work with the widest possible range of social actors and institutions, taking the opportunity to build upon and connect already planned events and to organize new bridge-building events to promote the Decade and its aims. On 20 September 2016 the co-convenors launched a major consultation process to develop the work programme of the Decade.

A series of consultations through coordination mechanisms such as UNSCN and multi-stakeholder platforms such as CFS, on-line forums and face-to-face meetings are being prepared to engage as many stakeholders as possible in the strategic process of developing the work programme. Participants will be invited to share views and ideas as well as receive feedback from countries and stakeholders on their expectations for the upcoming ten years.

Many countries and other actors are already strongly committed to existing food and nutrition initiatives, mechanisms, alliances, movements or partnerships. These efforts will provide the structure for action. The umbrella of the Decade creates a framework for sharing experiences, promoting improved coordination by the participants themselves, and building political momentum for scaled up global action.

The Decade will facilitate North-South, South-South and triangular cooperation and learning.

How is the UN Decade of Action on Nutrition contributing to the achievement of Agenda 2030 and its Sustainable Development Goals?

With the adoption of the Agenda 2030 and its Sustainable Development Goals (SDGs) at the UN General Assembly in September 2015, world leaders committed to rid the world of the twin scourges of poverty and hunger and set out a vision for a fairer, more inclusive, prosperous, peaceful and sustainable world in which no one is left behind. SDG 2 in particular, aims to end hunger, achieve food security and improved nutrition, and promote sustainable agriculture.

The achievement of the 2030 SDGs will only be met when much greater political focus is given towards improving nutrition, as nutrition is both an input and outcome of sustainable development.

The UN Decade of Action on Nutrition provides an opportunity for all partners to work together, mobilise action and accelerate efforts towards the elimination of hunger, food insecurity and all forms of malnutrition and meeting the SDGs by 2030.

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ARGHYA

[VITAMIN]

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- United nation decade of action on nutrition: 2016-2025.
- Decade pillars for nutritional action.
- Review strength and promote nutrition.
- Academia Institution efforts for preventing malnutrition.
- Publishing this issue to the society.
- Vitamins

Thanks

1) Dr. Urmilaben Chaudhari -Principal
2) Prof. Dr. Minaben S. Vyas- Head of the Sanskrit

Content

Vitamin C

Vitamin C or L-ascorbic acid or simply ascorbate (the anion of ascorbic acid), is an essential nutrient for human and certain other animal species. Vitamin C activity in animals, including ascorbic acid and its salts, some oxidized forms of the molecule like dehydroascorbic acid. Ascorbate and ascorbic acid are both naturally present in the body when either of these is introduced into cells, since the forms interconvert according to pH.

Vitamin C is a cofactor in at least eight enzymatic reactions, including several collagen synthesis reactions that, when dysfunctional, cause the most severe symptoms of scurvy. In animals, these reactions are especially important in wound-healing and in preventing bleeding from capillaries. Ascorbate also acts an as antioxidant, protecting against oxidative stress.

The discovery dates of the vitamins and their sources

Year of discovery	Vitamin	Food sources
1913	Vitamin A (Retinol)	Cod liver oil
1910	Vitamin B1 (Thiamine)	Rice bran
1920	Vitamin C (Ascorbic acid	Citrus, most fresh foods
1920	Vitamin D (Calciferol)	Cod liver oil
1920	Vitamin B2(Riboflavin)	Meat, dairy products, eggs
1922	(Vitamin E)(Tocopherol)	Wheat germ oil,unrefined vegetable oils
1926	Vitamin B12 (Cobalamins)	Liver,eggs,animal products
1929	Vitamin K1 (phylloquinone)	Leaf vegetable
1931	Vitamin B5(Pantothenic acid)	Meat,dairy products,eggs
1931	Vitamin B7(Biotion)	Meat dairy products,eggs
1934	Vitamin B6 (Pyridoxine)	Meat,dairy products
1936	Vitamin B3(Niacian)	Meat,grains
1941	Vitamin B9(Folic acid)	Leaf vegetables

Other Vitamin A Rich Foods

Zucchini (Cooked)	1117IU (40% DV) per 100 gram serving	2011IU (40% DV)per cup,sliced(180 grans)	1340IU(27% DV) per1/2 cup,mashed(120 grams)
CarrotJuice	19124IU (382% DV) per 100 gram serving	45133IU (903% DV)per cup(236grams)	5737IU (115%DV) per fiuid ounce (30 grams)
Pate de Foie Gras	3333IU (67% DV per 100 grams serving	4333IU (9% DV)per ounce tablespoon (13 grams)	933Iu (19% DV) per ounce (28 grams)
Watercress	3191IU64% DV per 100 grams	1085IU (22%DV)per cup, chopped (34 grams)	798IU (16% DV)per 10 sprigs (25 grams)
Apricots	1926IU (39% DV)per 100 grams serving	2985IU(60% DV)per cup,halves (155 grams)	674IU (13% DV)per apricot (35 grams)
Passion Fruit	1271IU(25% DV par 100 gram serving	3002IU (60% DV)per cup,(236 grams)	229IU (5% DV per Fruit (18 grams)
Garden Cress	6917IU (138% DV)per100 grams serving	3459IU(69% DV) per cup (50 grams)	69IU(1% DV)per sprig (1 gram)
Broccoli Raab (Cimle di Rapa)	2622IU (52% DV)per 100 gram serving	1049IU (21% DV)per cup,chopped (40 grams)	498IU (10% DV)per stalk (19 grams)
Butter	2499IU (50% DV)	350IU (7%DV)per	125IU (2% DV)per pat
Eel(Cooked)	3787IU (76% DV) Per 100 gram serving	3219IU(64% DV) per 3oz (85 grams)	6021IU (120% DV) per fillet (159 grams)
Liverwurst	27667IU(553% DV) per 100 gram serving	4980IU (100% DV)per slice (18 grams)	7747IU (155% DV) per ounce (28 gram)
Silken Tofu	1913IU (38% DV) per 100 gram serving	1741IU(35% DV) per 1/5 Package (91 grams)	
Canned Pumpkin	15563Iu (311%DV per 100 gram serving	38129IU(763% DV) per cup (245 grams)	
Goat	1745IU (35% DV) per 100	489IU (10% DV) per ounce	

Cheese (Hard)	gram serving	(28 grams)	
Green Peas	2100IU(42%DV)per100 gram serving	3360IU(68%DV)per cup (160 grams)	1680IU(34%DV)in a half cup(80 gram)
Tomatoes	833IU (17% DV) per 100 gram serving	1499IU (30% DV)per cup chopped(180 grams)	1025IU (20% DV) in an average tomato (123 grams)
Fortified Skim (Non-Fat) Milk*	204IU (4% DV)per 100 gram serving	500IU (10% DV)per cup (245 grams)	63IU (1% DV)in a fluid ounce (31 grams)
Whole Milk	162IU (3% DV)per 100 gram serving	395IU (8% DV)per cup (244 grams)	50iU(1%DV)in a fluid ounce (31 grams)
Eggs(Yolks)	538IU (11% DV)per 100 gram serving	269IU (5% DV) in one large egg (50 grams)	245IU (5% DV) in a large yolk (17 grams)
Oatmeal (Fortified)	433IU (9% DV)per 100 gram serving	1013IU(20% DV)per cup (234 grams)	507IU (10% DV)in a half-cup (117 grams)

1. **VAGHELA PRAYOSHABA JANAKSINH**
ROLL NO: 1178
S.Y.B.A. GUJARATI
P.K.CHAUDHARY MAHILA ARTS COLLEGE

2. **MALEK NAJANEEN GULAMNABI**
ROLL NO: 1112
S.Y.B.A. GUJARATI
P.K.CHAUDHARY MAHILA ARTS COLLEGE

Top 10 Foods Highest in Thiamin (VitaminB1)

VitaminB1, Thiamin, or Thiamine, is an essential nutrient required by the body for maintaining cellular function and consequently a wide array of organ functions. D efficiency of vitamin B1 leads to wholesale degeneration of the body, particularly the nervous and circulatory systems. and eventually death. Further, deficiency of vitamin B1 can lead to development of beriberi and/or Wernicke-korsakoff syndrome. Symptoms of both include severe fatigue, and degeneration of cardiovascular, nervous, muscular, and gastrointestinal systems. Over-consumption of vitamin B1 is unknown and studies show that amounts taken well in excess of the daily value (DV) can actually enhance brain functioning. The current daily value (DV) for vitamin B1 is 1.4mg. Below is a list high thiamin foods, click here for high vitamin B1 (thiamin) foods by nutrient density, here for an extended list of thiamin rich foods, and here for other vitamin B foods.

Table-1 Fish (Trout)

Thiamin in 100g	Per 3oz (85g)	Per fillet (62g)
0.43mg (28%DV)	0.36mg (24% DV)	0.26mg (18%DV)

Other Fish High in Thiamin (% DV per3oz cooked): Salmon (19%), Tuna (16%), Shad (10%), and mackerel (9%)

Table-2 Pork (Lean)

Thiamin in 100g	Per 3oz (85g)	Per piece (238g)
1.12mg (74% DV)	0.95mg (63%DV)	2.66mg (177%DV)

Other Cuts of Pork High in Thiamin (%DV per 3oz cooked): Lean Pork Lion (58%), Lean Pork Tenderloin (57%), and Lean Pork Chops (51%). A single pork chop (Bone in, 206g) provides 67%DV.

Table-3 Seeds (Sunflower)

Thiamin in 100g	Per cup (46g)	Per ounce (28g)
1.48mg(99%DV)	0.68mg (45% DV)	0.41mg (28% DV)

Other Seeds High in Thiamin (DV per ounce): Flax (31%), Sesame Seeds (22%), Chia Seeds (16%), and Pumpkin &Squash Seeds (5%).

Table-4 Highest in Thiamin (Vitamin B1)

Thiamin in 100g	Per cup (132g)	Per ounce (28g)
0.71 mg (47% DV)	0.94mg (62%DV)	0.20mg (13%DV)

Other Nuts High in Thiamin (%DV per ounce): Pistachio (13%), Brazil nuts (12%),Pecans (9%) and Cashews (7%).

Table-5 Bread (Wheat)

Thiamin in 100g	Per slice (29g)	Per ounce (28g)
0.47mg (31%DV)	0.14mg (9%DV)	0.13mg (9%DV)

Other Breads High in Thiamin (% DV per slice or piece): Wheat Bagel (26%), Wheat English Muffin (16%), and Rye Bread (9%).

Table-6 Green Peas

Thiamin in 100g	Per Cup (160g)	Per ½ cup (80g)
0.28mg (19% DV)	0.45mg (30%DV)	0.23mg (15%DV)

Other Similar Vegetables High in Thiamin (DV per cup cooked): Fresh Green Peas (28%), and Frozen Sweet Corn (19%).

Table-7 Squash (Acorn)

Thiamin in 100g	1 cup cubes (250g)	1 cup mashed (245g)
0.17mg (11% DV)	0.34mg (23%DV)	0.25mg (16%DV)

Other squash high in thiamin (%DV per cup of cubes): Hubbard and butternut (10%)

Table-8 Asparagus (cooked)

Thiamin in 100g	Per ½ cup (90)	Per 4 spears
0.16mg (11%Dv)	0.15mg (10%Dv)	0.10mg (6%DV)

1/2cup of canned uncooked asparagus provides (5%) DV, and ½ cup of cooked, frozen asparagus provides (4%) DV

Table-9 dry Roasted soy Beans (Edamame)

Highest in thiamin (vitamin B1)

Thiamin in 100g	Per cup (93g)	Per ounce (28g)
0.43mg (28%DV)	0.40mg (26%DV)	0.12(6%DV)

An ounce of Edamame contains 126 calories.

Table-10 Beans (Navy)

Thiamin in 100g	Per cup (182g)	Per ½ cup (91g)
0.24mg (16%DV)	0.43mg (29%DV)	0.22mg (15%DV)

Other Beans High in Thiamin (%DV per cup cooked): Pink Beans (29%), Black Beans (28%) and Mung Bean (22%).

1. **SOLANKI RICHA M.**
ROLL NO: 1132
S.Y B.A GUJARATI. SEM -3.
P.K.CHAUDHARY MAHILA ARTS COLLEGE

2. **MALEK MOHASINA I.**
S.Y. B.A GUJARATI. SEM -3
ROLL NO: 1113
P.K.CHAUDHARY MAHILA ARTS COLLEGE

Recipes-High in vitamin –A Spicy Lentil Cabbage

This is a recipe that goes into the extreme health Category. It is packed with nutrients from the cabbage (vitamin A, C, and calcium) as well as proteins from the Lentils, thrown altogether with an onion, head of garlic, And Indian style spices. This total preparation and/or cooking time: 45 minutes.

Step: 1

Gather your ingredients. You will only use

Half a cabbage, so go ahead and chop it in half and give it a good rinse, also wash 1 cup of lentils in a bowl of water. This recipe uses peeled lentils which cook faster than regular lentils.

Step: 2

Get a work type pan (or a saute pan) and add about 2 tablespoons of red wine (or vinegar, or water) to It. Set to medium high heat. While the pan is per-heading, peel the onion and dice it. Once diced you can it to the pan and stir.

Step: 3

While the onions are cooking break the garlic into pieces.

Step: 4

You now need to peel the papery skin off of each clove. You can crush the garlic to make peeling easier. Once peeled, give all the cloves a rough chop, and add them to the pan with the onions.

Step: 5

Be sure to mix all the ingredients often while cooking, add extra water if necessary. A lid can also be used to make sure the ingredients do not get too dry.

Step: 6

While the onion and garlic are cooking you can dice the cabbage. Cut in the same way as the onion, in one direction, and then in the other.

Step: 7

Add all that cabbage to the pan and give everything a good stir.

Step: 8

Now is a great time to add spices. There is no set rule, so spice to taste. Start by adding ½ a teaspoon of cumin, coriander, turmeric, and red chili powder each. Then use a spoon to try some of the dish. Be sure it cools on the spoon before tasting! Add more spice to taste.

1. **DAMOR JAIMINIBEN JESINGBHAI**
CLASS – T.Y B.A (GUJARATI)
SEM-5
ROLL NO-2206
P.K.CHAUDHARY MAHILA ARTS COLLEGE

2. **CHAUDHARY MITTALBEN RAMANBHAI**
CLASS-T.Y B.A (GUJARATI)
SEM-5
ROLL NO-2205
P.K.CHAUDHARY MAHILA ARTS COLLEGE

Tope 10 foods highest in vitamin A

Prof. Dr. Leenaben swadiya
Shri P.K. Chaudhari Mahila Arts College,
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Vitamin A is an essential vitamin required for vision, gene transcription, boosting immune function, and great skin health. A deficiency in vitamin A can lead to blindness and increased viral increased viral infection, however deficiency is only considered a problem in developing countries where it is a leading cause of blindness in children. Overconsumption of vitamin A can lead to jaundice, nausea, loss of appetite, irritability, vomiting, and even hair loss. Vitamin A is a fat soluble vitamin, and therefore, needs to be consumed with fat in order to have optimal absorption. High vitamin A foods include sweet potatoes, carrots, dark leafy greens, winter squashes, lettuce, dried apricots, cantaloupe, bell peppers, fish, liver, and tropical fruits. The current daily value for vitamin A is 5000 international units (IU).

1. Sweet potato (cooked)

Other Types of Sweet Potato High in Vitamin A (%DV per cup)
Frozen sweet potato, cooked, cubed (578%), canned sweet potato (444%), and Raw sweet potato, cubed (377%).

2. Carrots (cooked)

Other Types of carrot High in Vitamin A (%DV per cup)
Frozen carrots, cooked, cubed (494%), and Raw Carrots, sliced (408%).

3. Dark Leafy Greens (Kale, Cooked)

Vitamin A in 100g	Per cup, chopped(130g)
13621IU(272%DV)	17707IU(354%DV)

Other Dark Leafy Greens High in Vitamin A (%DV per cup, cooked) Frozen Collards (391%), Frozen Kale (382%), Frozen Turnip Greens (353%), Spinach (458%), Dandelion Greens (289%), collards (289%), Beet & Turnip Greens (220%), Swiss chard (214%), and Pak Choi (144%).

4. Squash (Butternut, cooked)

Other Squash High in Vitamin A (%DV Per cup, cooked)
Hubbard, cubed (275%), Pumpkin, mashed (282%), and an average of All Varieties of Winter Squash, cubed (214%).

5. Cos or Romaine Lettuce

Vitamin A in 100g	Per cup, shredded (47%)	Per head (626g)
8710IU(174%DV)	4094IU (82%DV)	54525IU (1090%DV)

Other Types of Lettuce High in A (%DV Per cup, shredded)
Green Leaf (53%), Red Leaf (42%), Butterhead (36%), and Chicory (33%).

6. Dried Apricots

Vitamin A in 100g	Per cup (119g)	Per ½ cup (60g)
12669IU (253%DV)	15076IU (302%DV)	7538IU (151%DV)

Other Dried Fruit high in Vitamin A (%DV Per ½ cup): Prunes (24%), and Dried Peaches (17%).

7. Cantaloupe Melon

Vitamin A in 100g	Per cup, cubes (160%)	Per medium wedge (69%)
3382IU (68%DV)	5411IU (108%DV)	2334IU (47%DV)

A medium wedge of cantaloupe melon contains 23 calories and 0.1g fat.

8. Sweet red Peppers

Vitamin A in 100g	1 cup chopped (149g)	1 Large pepper (164g)
3131IU (63%DV)	4665IU (93%DV)	5135IU (103%DV)

Other Peppers Providing Vitamin A (%DV per Large pepper)
Sweet Green Peppers (12 %) and Sweet Yellow pepper (7%).

9. Tuna Fish (Cooked)

Vitamin A in 100g	Per 3ozn (85g)	Per ounce (28g)

2520IU (50%DV)	21421U (43%)	714IU(14%DV)

Other Fish and Seafood High in Vitamin A (%DV Per 3oz, cooked)
Sturgeon (15%), Mackerel (14%), and Oysters (8%).

10. Tropical Fruit (Mango)

Vitamin A in 100g	Per cup, pieces (165g)	Per mango (336g)
1082IU (22%DV)	1785IU (36%DV)	3636IU (73%DV)

Other Tropical Fruit High in Vitamin A (%DV per fruit) Papaya, small (30%).

VITAMINS

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Vitamins are organic compound carbon containing that are essential in small amounts for body processes. Vitamins themselves do not provide energy. They enable the body to use the energy. They enable the body to use the energy provided by fats, carbohydrates and proteins. The name vitamin implies their importance vita in Latin means life. They do not; however represent a panacea for physical or mental illness or a way to alleviate the stress of modern life. They should not be overused- more is not necessarily better. In fact mega doses can be toxic (poisonous) normally, a healthy person eating a balanced diet will obtain all the nutrient including vitamins needed.

Human Requirement: The food and Nutrition Board of the National Academy of Sciences – National Research Council has prepared a list of RDA for those 11 vitamins for which it considers current scientific research adequate for such determinations. In addition, the board also has prepared safe and adequate daily dietary intakes of two additional vitamins for which current research is inadequate to allow them to propose RDAs Vitamins allowances are given by weight- milligrams or micrograms.

The term avitaminosis means without vitamin. His word followed by the name of a specific vitamin is used to indicate a serious lack of that particular vitamin. Hypervitaminosis is the excess of vitamins can be determined to a person's health. Vitamins taken in addition to those received in the diet are called vitamin supplements. These are available in concentrated form of in tables' capsules and drop.

Preserving Vitamin Content in Food: Occasionally, Vitamins are lost during food processing. In most cases food producers can replace these vitamins with synthetic vitamins making the processed food nutritionally equal to the unprocessed food. Foods in which vitamin have been replaced are called restored foods in which vitamins have been replaced are called restored food. Because some vitamins are easily destroyed by light air, heat and water. It is important to know how to preserves the vitamin content of food during its preparation and cooking. Vitamin loss can be avoided by

- ✓ Buying the fresh heat, unbruised, vegetables and fruits using their raw whenever possible.
- ✓ Preparing fresh vegetables and fruits just before serving.
- ✓ Heating canned vegetables quickly and in their own liquid.
- ✓ Using as little water as possible when cooking and having it boiling before adding vegetable or preferably steaming them.
- ✓ Covering the pan (except for the first few minutes when cooking strongly flavored vegetables such as broccoli and cauliflower and cooking as short time as possible.
- ✓ Saving the cooking liquid for later use in soups stews and gravies.
- ✓ Storing fresh vegetables and meat fruits in a cool, dark place.

Summary: Vitamins are compounds that regulate body functions and promote growth. Each vitamin has a specific function or functions within the body. Food sources of Vitamins vary but generally a well balanced diet provides sufficient vitamins to fulfill body requirement. Vitamins deficiencies can result from inadequate diets or from one body's inability to utilize vitamins. Vitamins are available in concentrated form but their use should be carefully mentored because overdoses can be detrimental to health. Vitamin A, D, E and K are fat soluble vitamins can be destroyed during food preparation. It is important that care is taken during the preparation of food to preserve its vitamin content.

Health Risks from Excessive Vitamin A

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Because vitamin A is fat soluble, the body stores excess amounts, primarily in the liver, and these levels can accumulate. Although excess preformed vitamin A can have significant toxicity (known as hypervitaminosis A), large amounts of beta-carotene and other provitamin A carotenoids are not associated with major adverse effects .The manifestations of hypervitaminosis A depend on the size and rapidity of the excess intake. The symptoms of hypervitaminosis A following sudden, massive intakes of vitamin A, as with Arctic explorers who ate polar bear liver, are acute. Chronic intakes of excess vitamin A lead to increased intracranial pressure (pseudotumor cerebri), dizziness, nausea, headaches, skin irritation, pain in joints and bones, coma, and even death. Although hypervitaminosis A can be due to excessive dietary intakes, the condition is usually a result of consuming too much preformed vitamin A from supplements or therapeutic retinoids. When people consume too much vitamin A, their tissue levels take a long time to fall after they discontinue their intake, and the resulting liver damage is not always reversible.

Observational studies have suggested an association between high intakes of preformed vitamin A (more than 1,500 mcg daily—only slightly higher than the RDA), reduced bone mineral density, and increased fracture risk. However, the results of studies on this risk have been mixed, so the safe retinol intake level for this association is unknown.

Total intakes of preformed vitamin A that exceed the UL and some synthetic retinoids used as topical therapies (such as isotretinoin and etretinate) can cause congenital birth defects. These birth defects can include malformations of the eye, skull, lungs, and heart. Women who might be pregnant should not take high doses of vitamin A supplements.

Unlike preformed vitamin A, beta-carotene is not known to be teratogenic or lead to reproductive toxicity . And even large supplemental doses (20–30 mg/day) of beta-carotene or diets with high levels of carotenoid-rich food for long periods are not associated with toxicity. The most significant effect of long-term, excess beta-carotene is carotenodermia, a harmless condition in which the skin becomes yellow-orange. This condition can be reversed by discontinuing beta-carotene ingestion.

Supplementation with beta-carotene, with or without retinyl palmitate, for 5–8 years has been associated with an increased risk of lung cancer and cardiovascular disease in current and former male and female smokers and in male current and former smokers occupationally exposed to asbestos. In the ATBC study, beta-carotene supplements (20 mg daily) were also associated with increased mortality, mainly due to lung cancer and ischemic heart disease. The CARET study ended early, after the investigators found that daily beta-carotene (30 mg) and retinyl palmitate (25,000 IU) supplements increased the risk of lung cancer and cardiovascular disease mortality.

The FNB has established ULs for preformed vitamin A that applies to both food and supplement intakes. The FNB based these ULs on the amounts associated with an increased risk of liver abnormalities in men and women, teratogenic effects, and a range of toxic effects in infants and children. The FNB also considered levels of preformed vitamin A associated with decreased bone mineral density, but did not use these data as the basis for its ULs because the evidence was conflicting. The FNB has not established ULs for beta-carotene and other provitamin A carotenoids . The FNB advises against beta-carotene supplements for the general population, except as a provitamin A source to prevent vitamin A deficiency.

Vitamin A Deficiency

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Frank vitamin A deficiency is rare in the United States. However, vitamin A deficiency is common in many developing countries, often because residents have limited access to foods containing preformed vitamin A from animal-based food sources and they do not commonly consume available foods containing beta-carotene due to poverty .According to the World Health Organization, 190 million preschool-aged children and 19.1 million pregnant women around the world have a serum retinol concentration below 0.70 micromoles. In these countries, low vitamin A intake is most strongly associated with health consequences during periods of high nutritional demand, such as during infancy, childhood, pregnancy, and lactation.

In developing countries, vitamin A deficiency typically begins during infancy, when infants do not receive adequate supplies of colostrum or breast milk. Chronic diarrhea also leads to excessive loss of vitamin A in young children, and vitamin A deficiency increases the risk of diarrhea. The most common symptom of vitamin A deficiency in young children and pregnant women is xerophthalmia. One of the early signs of xerophthalmia is night blindness, or the inability to see in low light or darkness. Vitamin A deficiency is one of the top causes of preventable blindness in children. People with vitamin A deficiency (and, often, xerophthalmia with its characteristic Bitot's spots) tend to have low iron status, which can lead to anemia. Vitamin A deficiency also increases the severity and mortality risk of infections (particularly diarrhea and measles) even before the onset of xerophthalmia .

Groups at Risk of Vitamin A Inadequacy

The following groups are among those most likely to have inadequate intakes of vitamin A.

Premature Infants

In developed countries, clinical vitamin A deficiency is rare in infants and occurs only in those with malabsorption disorders. However, preterm infants do not have adequate liver stores of vitamin A at birth and their plasma concentrations of retinol often remain low throughout the first year of life. Preterm infants with vitamin A deficiency have an increased risk of eye, chronic lung, and gastrointestinal diseases.

Infants and Young Children in Developing Countries

In developed countries, the amounts of vitamin A in breast milk are sufficient to meet infants' needs for the first 6 months of life. But in women with vitamin A deficiency, breast milk volume and vitamin A content are suboptimal and not sufficient to maintain adequate vitamin A stores in infants who are exclusively breastfed. The prevalence of vitamin A deficiency in developing countries begins to increase in young children just after they stop breastfeeding. The most common and readily recognized symptom of vitamin A deficiency in infants and children is xerophthalmia.

Pregnant and Lactating Women in Developing Countries

Pregnant women need extra vitamin A for fetal growth and tissue maintenance and for supporting their own metabolism . The World Health Organization estimates that 9.8 million pregnant women around the world have xerophthalmia as a result of vitamin A deficiency. Other effects of vitamin A deficiency in pregnant and lactating women include increased maternal and infant morbidity and mortality, increased anemia risk, and slower infant growth and development.

People with Cystic Fibrosis

Most people with cystic fibrosis have pancreatic insufficiency, increasing their risk of vitamin A deficiency due to difficulty absorbing fat. Several cross-sectional studies found that 15%–40% of patients with cystic fibrosis have vitamin A deficiency. However, improved pancreatic replacement treatments, better nutrition, and caloric supplements have helped most patients with cystic fibrosis become vitamin A sufficient. Several studies have shown that oral supplementation can correct low serum beta-carotene levels in people with cystic fibrosis, but no controlled studies have examined the effects of vitamin A supplementation on clinical outcomes in patients with cystic fibrosis.

Vitamin A and Health

This section focuses on three diseases and disorders in which vitamin A might play a role: cancer, age-related macular degeneration (AMD), and measles.

Cancer

Because of the role vitamin A plays in regulating cell growth and differentiation, several studies have examined the association between vitamin A and various types of cancer. However, the relationship between serum vitamin A levels or vitamin A supplementation and cancer risk is unclear.

Several prospective and retrospective observational studies in current and former smokers, as well as in people who have never smoked, found that higher intakes of carotenoids, fruits and vegetables, or both are associated with a lower risk of lung cancer, however, clinical trials have not shown that supplemental beta-carotene and/or vitamin A helps prevent lung cancer. In the Carotene and Retinol Efficacy Trial (CARET), 18,314 current and former smokers (including some males who had been occupationally exposed to asbestos) took daily supplements containing 30 mg beta-carotene and 25,000 IU retinyl palmitate for 4 years, on average. In the Alpha-Tocopherol, Beta-Carotene (ATBC) Cancer Prevention Study, 29,133 male smokers took 50 mg/day alpha-tocopherol, 20 mg/day beta-carotene, 50 mg/day alpha-tocopherol and 20 mg/day beta-carotene, or placebo for 5–8 years. In the beta-carotene component of the Physicians' Health Study, 22,071 male physicians took 325 mg aspirin plus 50 mg beta-carotene, 50 mg beta-carotene plus aspirin placebo, 325 mg aspirin plus beta-carotene placebo, or both placebos every other day for 12 years. In all three of these studies, taking very high doses of beta-carotene, with or without 25,000 IU retinyl palmitate or 325 mg aspirin, did not prevent lung cancer. In fact, both the CARET and ATBC studies showed a significant increase in lung cancer risk among study participants taking beta-carotene supplements or beta-carotene and retinyl palmitate supplements. The Physicians' Health Study did not find an increased lung cancer risk in participants taking beta-carotene supplements, possibly because only 11% of physicians in the study were current or former smokers.

The evidence on the relationship between beta-carotene and prostate cancer is mixed. CARET study participants who took daily supplements of beta-carotene and retinyl palmitate had a 35% lower risk of nonaggressive prostate cancer than men not taking the supplements. However, the ATBC study found that baseline serum beta-carotene and retinol levels and supplemental beta-carotene had no effect on survival. Moreover, men in the highest quintile of baseline serum retinol levels were 20% more likely to develop prostate cancer than men in the lowest quintile.

The ATBC and CARET study results suggest that large supplemental doses of beta-carotene with or without retinyl palmitate have detrimental effects in current or former smokers and workers exposed to asbestos. The relevance of these results to people who have never smoked or to the effects of beta-carotene or retinol from food or multivitamins (which typically have modest amounts of beta-carotene) is not known. More research is needed to determine the effects of vitamin A on prostate, lung, and other types of cancer.

VITAMINS IN FOODS

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Introduction

Vitamins are organic substances present in small amounts in many foods including milk and its products. They are required for carrying out many vital functions of the body hence is vital whence the name vitamin has been coined. The vital functions in which vitamins are involved are the utilization of the major nutrients like carbohydrates, fats and proteins. They are needed in small amounts but are essential for health and well being of the body.

(1) Vitamin A (Retinol):

Vitamin A is necessary for clear vision in dim light. Lack of vitamin A thus leads to night blindness. Besides it maintains the integrity of epithelial tissues. Inadequate intake of Vit. A, the outer lining of the eye balls loses its usual moist white appearance which leads to make them dry and wrinkled. Redness and inflammation of the eye and gradual loss of vision may follow. Cornea may lose its transparency, become opaque and soft. If not treated may lead to blindness. The mechanism of these functions is not understood clearly even today.

Vitamin A Present in animal foods as retinol, and in plant foods mostly butter, ghee, whole milk, curd-all milk products. Their chemical structure includes double bonds which are susceptible to oxidation. Attacked by peroxides and free radicals formed from lipid oxidation. Losses promoted by traces of copper and iron which catalyses the oxidation. Negligible losses due to leaching.

(2) Vitamin B1 (Thiamin):

Vitamin B1 Present in animal and plant tissues either as free thiamin or bound to pyrophosphate or protein. Destroyed by sculpture dioxide (in sulphited fruits and vegetables), KBrO3 flour improver and thiaminase. Polyphenoloxidase catalyses thiamin destruction by phenols in plant tissues. Substantial losses due to leaching and drip losses.

(3) Vitamin B2 (Riboflavin):

Vitamin B2 Occurs as free from in milk but mostly bound with phosphate in other foods. Destroyed by alkaline conditions, light and excessive heat. Stable in air and acids.

Niacin Occurs as nicotinamide adenine dinucleotide phosphate and as nicotinic acid. Bound to polysaccharides and peptides hence not available in many cereals unless liberated by heat or alkaline conditions like baking powder. The amino acid tryptophan is converted to niacin in the body generally stable.

Folic acid Occurs in various forms, expressed as pteroyl glutamic equivalent, with varius numbers of glutamate residues and methyl or formyl groupings. Richest sources are dark green leaves, liver and kidney. More difficult to assay than other vitamins. Possibly one of the few causes of deficiency disease in industrialized countries, especially in pregnant women, preterm infects and the elderly.

(4) Vitamin B6 (Pyridoxine):

Occurs in three forms, namely pyridoxine, pyridoxal and pyridoxamine. The first two are found in plants and the last two in animal tissues. Mostly in a free form in milk, otherwise bound. Difficult to assay and may be deficient in some diets. Lost by reaction with sulphydryl groups of proteins and amino acids when heated or during storage.

(5) Vitamin B 12 (Cyano cobalamin)

Small losses due to interaction with vitamin C and sulphydryl compounds in the presence of oxygen in milk. Generally stable.

Milk is an important source of vitamin B 12 especially for vegetarians. Like folacin, Vitamin B 12 in milk is bound to special proteins. Though the importance of the proteins is unknown, but different functions have been suggested, e.g. making the vitamin more or less available to the microflora of the small intestines or initially facilitating the up take of the vitamin by infants who do not yet have a complete production of the intrinsic order.

The loss of vitamin B 12 during UHT treatment seems to vary from no loss to about 30 %. During storage, an almost complete loss of vitamin B 12 can occur. Storage conditions responsible for loss of Vitamin B 12 are not yet well understood.

(6) Vitamin C (ascorbic acid):

Occurs as both ascorbic acid and dehydroascorbic acid. The latter is very heat labile, with or without the presence of oxygen. Very soluble and readily lost by leaching and in drip losses. Destroyed by a number of plant enzymes, including ascorbic acid oxidase, peroxidase, cytochrome oxidase and phenolase. Copper and iron catalyse oxidation in air, but SO 2 protects against oxidation. Most labile of the vitamin and substantial losses in most processing. Vitamin C retention sometimes used as an indicator of severity of processing. Also used as an antioxidant and stabilizer, as a flour improver and in cured meats.

(7) Vitamin D:

Occurs in foods as cholecalciferol (D3) and produced in the skin under the influence of UV light. The synthetic type, ergocalciferol (D2) is added to save milk products, baby foods and margarine. The vitamin is stable under all normal processing and storage conditions.

(8) Vitamin E:

Occurs in eight compounds: 4 tocopherols and 4 tocotrienols, each of which has a different potency. Activity usually expressed as a-tocopherol equivalents. Naturally occurring antioxidant but is lost very slowly. Generally stable during processing , except frying in which it is destroyed by peroxides.

Estimation:

The estimation of individual vitamins in foods is, generally speaking, more difficult than that of most other food constituents. This is due to the often exceedingly small amounts present in food and to the diverse and complex nature of most vitamins.