



SUBJECT

BIOCHEMISTRY

TOPIC

VITAMINS

D.PHARM 2nd YEAR

BIOCHEMISTRY | D.PHARMA | 2ND YEAR

Vitamins – Definition, Classification, Sources, Chemical Nature, Functions, Coenzyme Form, RDA & Deficiency Diseases

1. Definition of Vitamins (विटामिन की परिभाषा)

English	हिन्दी
Vitamins are organic compounds required in small amounts for normal growth, metabolism, reproduction, and maintenance of good health. They do not provide energy but help regulate various biochemical reactions in the body.	विटामिन ऐसे कार्बनिक (Organic) यौगिक हैं, जिनकी शरीर को बहुत कम मात्रा में आवश्यकता होती है। ये शरीर की वृद्धि, उपापचय (Metabolism), प्रजनन तथा अच्छे स्वास्थ्य के लिए आवश्यक होते हैं। ये ऊर्जा (Energy) नहीं देते, बल्कि शरीर की जैव-रासायनिक क्रियाओं को नियंत्रित करते हैं।

2. Classification of Vitamins (विटामिनों का वर्गीकरण)

Type (English)	हिन्दी	Examples (उदाहरण)
Fat-Soluble Vitamins	वसा में घुलनशील विटामिन	A, D, E, K
Water-Soluble Vitamins	जल में घुलनशील विटामिन	Vitamin C, B-Complex (B1, B2, B3, B5, B6, B7, B9, B12)

3. Fat-Soluble Vitamins (वसा में घुलनशील विटामिन)

Vitamin	Sources (स्रोत)	Chemical Nature (रासायनिक प्रकृति)	Functions (कार्य)	Coenzyme Form	Deficiency Disease (कमी से होने वाला रोग)
Vitamin A (Retinol)	Liver, Milk, Butter, Egg, Carrot, Spinach	Retinoids	Vision, Growth, Immunity, Healthy Skin	None	Night Blindness (रतौंधी), Xerophthalmia
Vitamin D (Calciferol)	Sunlight, Fish, Egg, Fortified Milk	Sterol	Calcium & Phosphorus absorption, Bone health	None	Rickets (Children), Osteomalacia (Adults)
Vitamin E (Tocopherol)	Vegetable Oils, Nuts, Seeds, Wheat Germ	Tocopherols	Antioxidant, Protects Cell Membrane	None	Hemolytic Anemia, Neuromuscular Disorders (Rare)
Vitamin K (Phylloquinone)	Green Leafy Vegetables, Broccoli, Gut Bacteria	Quinones	Blood Clotting (Clotting Factors II, VII, IX, X)	None	Bleeding Disorders, Delayed Blood Clotting

4. Water-Soluble Vitamins (जल में घुलनशील विटामिन)

Vitamin	Sources (स्रोत)	Chemical Nature (रासायनिक प्रकृति)	Functions (कार्य)	Coenzyme Form	Deficiency Disease (कमी से होने वाला रोग)
Vitamin B1 (Thiamine)	Whole Grains, Pulses, Pork, Nuts	Thiazole Compound	Carbohydrate Metabolism,	TPP (Thiamine Pyrophosphate)	Beriberi, Wernicke-Korsakoff Syndrome

Vitamin	Sources (स्रोत)	Chemical Nature (रासायनिक प्रकृति)	Functions (कार्य)	Coenzyme Form	Deficiency Disease (कमी से होने वाला रोग)
			Nerve Function		
Vitamin B2 (Riboflavin)	Milk, Eggs, Green Vegetables	Isoalloxazine Compound	Energy Metabolism	FAD, FMN	Cheilosis, Glossitis, Dermatitis
Vitamin B3 (Niacin)	Meat, Fish, Groundnuts	Pyridine Derivative	Energy Production	NAD⁺, NADP⁺	Pellagra (3 Ds: Dermatitis, Diarrhea, Dementia)
Vitamin B5 (Pantothenic Acid)	Eggs, Meat, Whole Grains	Pantothenic Acid	Fatty Acid Metabolism	Coenzyme A (CoA)	Rare – Fatigue, Burning Feet Syndrome
Vitamin B6 (Pyridoxine)	Banana, Fish, Meat, Cereals	Pyridine Derivative	Amino Acid Metabolism	PLP (Pyridoxal Phosphate)	Peripheral Neuropathy, Convulsions
Vitamin B7 (Biotin)	Egg Yolk, Liver, Nuts	Biotin	Carboxylation Reactions	Biotin	Dermatitis, Hair Loss
Vitamin B9 (Folic Acid)	Green Vegetables, Citrus Fruits	Pteroylglutamic Acid	DNA Synthesis, RBC Formation	THF (Tetrahydrofolate)	Megaloblastic Anemia, Neural Tube Defects
Vitamin B12 (Cobalamin)	Meat, Liver, Eggs, Milk	Cobalt-containing Compound	DNA Synthesis, Nerve Function	Methylcobalamin, Adenosylcobalamin	Pernicious Anemia, Neurological Disorders

Vitamin	Sources (स्रोत)	Chemical Nature (रासायनिक प्रकृति)	Functions (कार्य)	Coenzyme Form	Deficiency Disease (कमी से होने वाला रोग)
Vitamin C (Ascorbic Acid)	Citrus Fruits, Amla, Guava	Ascorbic Acid	Collagen Synthesis, Antioxidant, Wound Healing	None	Scurvy, Bleeding Gums, Poor Wound Healing

5. Important Differences between Fat-Soluble and Water-Soluble Vitamins

Fat-Soluble Vitamins	Water-Soluble Vitamins
Fat में घुलते हैं	Water में घुलते हैं
Vitamins A, D, E, K	Vitamin B-Complex & C
Stored in liver and adipose tissue (शरीर में संग्रहित होते हैं)	Generally not stored (except B12)
Deficiency develops slowly	Deficiency develops quickly
Excess may cause toxicity	Excess usually excreted in urine
Require bile salts for absorption	Absorbed directly into blood

6. Quick Revision Table (Exam-Oriented)

Vitamin	Deficiency Disease
Vitamin A	Night Blindness
Vitamin D	Rickets / Osteomalacia
Vitamin E	Hemolytic Anemia
Vitamin K	Bleeding Disorders

Vitamin	Deficiency Disease
Vitamin B1	Beriberi
Vitamin B2	Cheilosis
Vitamin B3	Pellagra
Vitamin B5	Burning Feet Syndrome
Vitamin B6	Peripheral Neuropathy
Vitamin B7	Dermatitis
Vitamin B9	Megaloblastic Anemia
Vitamin B12	Pernicious Anemia
Vitamin C	Scurvy

PHARMACY
INDIA



BEST BOOKS FOR D.PHARMA 2ND YEAR
Bilingual Book (द्विभाषी पुस्तक)

As per the
PCI syllabus
of 1st & 2nd year

CASH ON DELIVERY AVAILABLE ON 6395596959, 8006781759



COD AVAILABLE ON



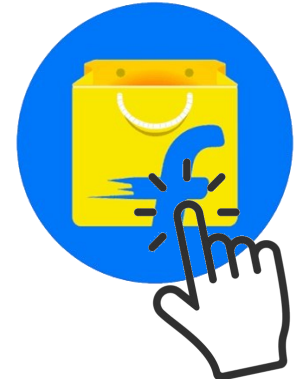
D.Pharm 2nd Year

MISSION BIEUP
Bilingual (Hindi+English)

1 BOOK कितनाब | 2 LANGUAGE भाषाएँ | 6 SUBJECT विषय

FULLY COLOURED IMAGE | 306 TABLETS WITH IMAGES | 1260 ONE MARK QUESTIONS | FREE PRACTICE QUESTIONS

Subjects Covered
PHARMACOLOGY
COMMUNITY PHARMACY & MANAGEMENT
BIOCHEMISTRY & CLINICAL PATHOLOGY
PHARMACOTHERAPEUTICS
HOSPITAL & CLINICAL PHARMACY
PHARMACY LAW & ETHICS



Contact for any Query - 6395596959



PHARMACY INDIA
www.pharmacyindia.co.in



PHARMACY INDIA

www.pharmacyindia.co.in



Join YouTube Channel



Pharmacy India Live

For Pharmacist Exam Preparations

SUBSCRIBE



Join WhatsApp & Telegram Channel



WhatsApp



Telegram

PHARMACY INDIA



Join Pharmacy India app



PHARMACY INDIA