

Davr- lar		Qator- lar		ELEMENTLAR GURUHLARI																En- er- giya qo- yil- lar	
				I		II		III		IV		V		VI		VII		VIII		O	
				1		2		3		4		5		6		7		8		9	
				1		2		3		4		5		6		7		8		9	
				1		2		3		4		5		6		7		8		9	
				1		2		3		4		5		6		7		8		9	
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				1		2		3		4		5		6		7		8		9	
				1		2		3		4		5		6		7					

104–109 elementlarning nomiari IUPAC tomonidan qabul qilingan, lekin hali tasdiqlanmagan. Kvadrat qavslarda eng barqaror izotopining massa sonlari keltirilgan.

■ - f. elementlar

- d- elementlar

p-elementlar

- s-elementar



1. Kimyoviy elementlar jadvali

Elementning nomi	Kimyoviy belgisi	Tartib nomeri	Uglerod shkalasi bo'yicha atom massasi
1	2	3	4
Azot	N	7	14,0067
Aktiniy	Ac	89	(227) ¹
Aluminiy	Al	13	26,9815
Ameritsiy	Am	95	(243)
Argon	Ar	18	39,948
Astati	At	85	(210)
Bariy	Ba	56	137,34
Berilliy	Be	4	9,0122
Berkliy	Bk	97	(247)
Bor	B	5	10,811
Brom	Br	35	79,904
Vanadiy	V	23	50,942
Vismut	Bi	83	208,980
Vodorod	H	1	1,00797
Volfram	W	74	183,85
Gadoliniiy	Cd	64	157,25
Galliy	Qa	31	69,72
Gafniy	Hf	72	178,49
Geliy	He	2	4,0026
Germaniy	Ge	32	72,59
Golmiy	Ho	67	164,930
Disproziy	Dy	66	162,50
Yevropiy	Eu	63	151,96
Indiy	In	49	114,32
Yod	I	53	126,904

¹ Qavslar ichida yarim yemirilish davri ancha uzoq bo'lgan izotoplarning massa soni ko'rsatilgan

1- jadvalning davomi

1	2	3	4
Iridiy	Ir	77	192,2
Itterbiy	Yb	70	173,04
Ittriy	Y	39	88,905
Kadmiy	Cd	48	112,40
Kaliy	K	19	39,102
Kaliforniy	Cf	98	(252)
Kalsiy	Ca	20	40,08
Kislorod	O	8	15,9994
Kobalt	Co	27	58,9332
Kremniy	Si	14	28,086
Kripton	Kr	36	83,80
Ksenon	Xe	54	151,30
Kumush	Ag	47	107,870
Kurchatoviy	Ku	104	(260)
Kyuriy	Cm	96	(247)
Lantan	La	57	138,91
Litiy	Li	3	6,930
Lourensiy	Lr	103	(256)
Lyutetsiy	Lu	71	174,97
Magniy	Mg	12	24,305
Marganes	Mn	25	54,9381
Mendeleyeviy	Md	101	(257)
Mis	Cu	29	63,546
Mishyak	As	33	74,9216
Molibden	Mo	42	95,94
Natriy	Na	11	22,9898
Neodim	Nd	60	144,24
Neon	Ne	10	20,179
Neptuniy	Np	93	(237)

1	2	3	4
Nikel	Ni	28	858,71
Niobiy	Nb	41	92,906
Nobeliy	No	102	(265)
Oltingugurt	S	16	32,064
Oltin	Au	79	196,967
Osmiy	Os	76	190,2
Palladiy	Pd	46	106,4
Platina	Pt	78	195,09
Plutoniya	Pu	94	(244)
Poloniya	Po	84	(210)
Prazeotsim	Pr	159	140,907
Prometiy	Pm	61	(147)
Protaktiniy	Pa	91	(231)
Radiy	Ra	88	(225)
Radon	Rn	86	(222)
Reniy	Re	75	186,2
Rodiy	Rh	45	102,905
Rubidiy	Rb	37	85,47
Ruteniy	Ru	44	101,07
Rux	Zn	30	65,37
Samariy	Sm	62	15(3.35
Selen	Se	34	78,96
Simob	Hg	80	200,59
Skandiy	Sc	21	44,956
Stronsiy	Sr	38	87,62
Surma	Sb	51	121,75
Talliy	Tl	81	204,37
Tantal	Ta	73	180,948
Tellur	Te	52	127,60

1- jadvalning davomi

1	2	3	4
Temir	Fe	26	55,847
Terbiy	Tb	65	158,924
Texnetsiy	Tc	43	(99)
Titan	Ti	22	47,90
Toriy	Th	90	232,038
Tuliy	Tm	69	168,93
Uglerod	C	6	12,01115
Uran	U	92	538,03
Fermiy	Fm	100	(257)
Fosfor	P	15	30,9738
Fransiy	Fr	87	(223)
Ftor	F	9	18,9984
Xlor	Cl	17	35,453
Xrom	Cr	24	51,995
Seziy	Cs	55	132,905
Seriy	Ce	58	140,12
Sirkoniy	Zr	40	91,22
Eynshteyniy	Es	99	(254)
Erbiy	Er	68	167,26
Qalay	Sn	50	118,69
Qo'rg'oshin	Pb	82	207,19

**2. 15°C da turli kontsentratsiyadagi xlorid
kislota ning zichligi**

Zich- ligi	HCl foizi	Zich- ligi	HCl foizi	Zich- ligi	HCl foizi	Zich- ligi	HCl foizi
1,000	0,16	1,060	12,19	1,120	23,82	1,165	32,49
1,005	1,15	1,065	13,19	1,125	24,78	1,170	33,46
1,010	2,14	1,070	14,17	1,130	25,75	1,171	33,69
1,015	3,12	1,075	15,16	1,135	26,70	1,175	34,42
1,020	4,13	1,080	16,15	1,140	27,66	1,180	35,39
1,025	5,15	1,085	17,13	1,142	28,14	1,185	36,31
1,030	6,15	1,090	18,11	1,145	28,61	1,190	37,23
1,035	7,15	1,095	319,06	1,150	29,57	1,195	38,16
1,040	8,10	1,100	20,01	1,152	29,95	1,200	39,11
1,045	9,16	1,105	20,97	1,155	30,55		
1,050	10,17	1,110	21,92	1,160	31,52		
1,055	11,18	1,115	22,86	1,163	32,10		

**3. 15°C da turli kontsentratsiyadagi sulfat
kislotaning zichligi**

Zich- ligi	H ₂ SO ₄ foizi	Zich- ligi	H ₂ SO ₄ foizi	Zich- ligi	H ₂ SO ₄ foizi	Zich- ligi	H ₂ SO ₄ foizi	Zich- ligi	H ₂ SO ₄ foizi
1	2	3	4	5	6	7	8	9	10
1,000	0,09	1,185	25,40	1,370	46,94	1,555	64,67	1,740	80,68
1,005	0,95	1,190	26,04	1,375	47,47	1,560	65,20	1,745	81,12
1,010	1,57	1,195	26,28	1,380	48,00	1,565	65,65	1,750	81,56
1,015	2,30	1,200	27,32	1,385	48,53	1,570	66,09	1,755	82,00
1,020	3,03	1,205	27,95	1,390	49,06	1,575	66,53	1,760	82,44
1,025	3,76	1,210	28,58	1,395	49,59	1,580	66,95	1,765	83,01
1,030	4,49	1,215	29,21	1,400	50,11	1,585	67,40	1,770	83,51
1,035	5,23	1,220	29,84	1,405	50,63	1,590	67,83	1,775	84,02
1,040	5,96	1,225	30,48	1,410	51,15	1,595	68,26	1,780	84,50
1,045	6,67	1,230	31,11	1,415	51,66	1,600	68,70	1,785	85,10
1,050	7,37	1,235	31,70	1,420	52,15	1,605	69,13	1,790	85,70
1,055	8,07	1,240	32,28	1,425	52,63	1,610	69,56	1,795	86,30
1,060	8,77	1,245	32,86	1,430	53,11	1,615	70,00	1,800	86,92
1,065	9,47	1,250	33,43	1,435	53,59	1,620	70,42	1,805	87,60
1,070	10,19	1,255	34,00	1,440	54,07	1,625	70,85	1,810	88,30
1,075	10,90	1,260	34,57	1,445	54,55	1,630	71,27	1,815	89,16
1,080	11,60	1,265	35,14	1,450	55,03	1,635	71,70	1,820	90,05
1,085	12,30	1,270	35,71	1,455	55,50	1,640	71,12	1,825	91,03
1,090	12,99	1,275	36,29	1,460	55,97	1,645	72,55	1,830	92,10

3-jadvalning davomi

1	2	3	4	5	6	7	8	9	10
1,095	13,67	1,280	36,87	1,465	56,43	1,650	72,96	1,831	92,43
1,100	14,35	1,285	37,45	1,470	56,90	1,655	73,40	1,832	92,70
1,105	15,03	1,290	38,03	1,475	57,37	1,660	73,81	1,833	92,97
1,110	15,71	1,295	38,61	1,480	57,83	1,665	74,24	1,834	93,25
1,115	16,36	1,300	39,19	1,485	58,28	1,670	74,66	1,835	93,56
1,120	17,01	1,305	39,77	1,490	58,74	1,675	75,08	1,830	93,80
1,125	17,66	1,310	40,35	1,495	59,22	1,680	75,50	1,837	94,25
1,130	18,31	1,315	40,93	1,010	59,70	1,685	75,94	1,838	94,60
1,135	18,96	1,320	41,50	1,505	60,18	1,690	76,38	1,839	9,500
1,140	19,61	1,325	42,08	1,510	60,65	1,695	76,76	1,840	95,60
1,145	20,25	1,330	42,66	1,515	61,12	1,700	77,17	1,8405	95,95
1,150	20,91	1,335	43,20	1,520	61,59	1,705	77,60	1,8410	96,38
	21,55	1,340	43,74	1,525	62,06	1,710	78,04	1,8415	97,35
1,160	22,19	1,345	44,28	1,530	62,43	1,715	78,48	1,8410	98,20
1,165	22,83	1,350	44,82	1,535	63,00	1,720	78,92	1,8405	98,52
1,170	23,47	1,355	45,35	1,540	63,43	1,725	79,36	1,8400	98,72
1,175	24,12	1,360	45,88	1,545	63,85	1,730	79,80		
1,180	24,76	1,365	46,41	1,550	64,26	1,735	80,24		

**4. 15°C da turli konsentratsiyadagi nitrat kislotaning
zichligi**

Zichligi	NHO ₃ foizi	Zichligi	NHO ₃ foizi	Zichligi	NHO ₃ foizi
1,005	1,00	1,210	33,82	1,440	74,68
1,010	1,90	1,220	35,28	1,450	77,28
1,015	2,80	1,230	36,78	1,460	79,93
1,020	3,70	1,240	38,29	1,465	81,45
1,030	5,50	1,250	30,82	1,470	82,90
1,040	7,26	1,260	41,34	1,475	84,42
1,050	8,99	1,270	42,87	1,480	86,05
1,060	10,68	1,280	44,41	1,485	87,70
1,070	12,33	1,290	45,95	1,490	89,60
1,080	13,95	1,300	47,49	1,495	91,60
1,090	15,53	1,310	49,0	1,500	94,09
1,100	17,11	1,320	50,71	1,501	94,0
1,110	18,67	1,330	52,37	1,502	95,08
1,120	20,23	1,340	54,07	1,503	95,55
1,130	21,77	1,350	55,79	1,504	96,00
1,140	23,31	1,360	57,57	1505	96,39
1,150	24,84	1,370	59,39	1,506	96,76
1,160	26,36	1,380	61,27	1,507	97,13
1,170	27,88	1,390	63,23	1,508	97,50
1,175	28,63	1,400	65,30	1,509	97,84
1,180	29,38	1,410	67,50	1,510	98,10
1,190	30,88	1,420	69,80	1,520	99,67

5. 18°C da asos va tuzlarning suvda eruvchanligi¹

	K ⁺	Na ⁺	Li ⁺	Ag ⁺	Ba ²⁺	Sr ²⁺	Ca ²⁺	Mg ²⁺	Zn ²⁺	Pb ²⁺
Cl ⁻	32,93	35,86	77,79	1	0,0313	37,24	51,09	55,81	203,9	1,49
Br ⁻	65,86	88,76	168,7	0,041	103,6	96,52	143,3	103,1	478,2	0,598
I ⁻	137,5	177,9	161,5	0,0635	201,4	169,2	200	148,2	419	0,08
F ⁻	92,56	4,44	0,27	195,4	0,16	0,012	0,0016	0,0087	0,005	0,07
NO ₃ ⁻	30,34	83,9	71,43	213,4	8,74	66,27	121,8	74,31	117,8	51,66
OH ⁻	142,9	116,4	12,04	0,01	3,7	1,77	0,17	0,001	0,035	0,01
SO ₄ ²⁻	11,12	16,83	35,64	0,55	0,0323	0,011	0,20	35,43	53,12	0,0041
CrO ₄ ²⁻	63,1	61,21	111,6	0,0025	0,0335	0,12	0,4	73,0	—	0,042
S ₂ O ₄	30,27	3,34	7,22	0,0035	0,0085	0,0046	0,00356	0,03	0,03	0,0315
CO ₃ ²⁻	108,0	19,39	1,3	0,003	0,0023	0,0011	0,0013	0,1	0,004	0,031

¹ Eruvchanlik moddaning 100 g suvni to'yintiruvchi grammolari hisobida ko'rsatilgan.

6. Kislota, asos va tuzlarning suvda eruvchanligi

	H ⁺	NH ₄ ⁺	K ⁺	Na ⁺	Ag ⁺	Ba ²⁺	Ca ²⁺	Mg ²⁺	Zn ²⁺	Cu ²⁺	Hg ²⁺	Pb ²⁺	Fe ²⁺	Al ³⁺	Fe ³⁺
OH ⁻		e	e	e	—	e	o	h	h	h	—	o	h	h	h
NO ₃ ⁻	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e
Cl ⁻	e	e	e	e	h	e	e	e	e	e	e	o	e	e	e
S ²⁻	e	e	e	e	h	—	—	—	h	h	h	h	h	h	—
SO ₃ ²⁻	e	e	e	e	o	o	o	o	h	—	—	h	o	—	—
SO ₄ ²⁻	e	e	e	e	o	h	o	e	e	e	—	o	e	e	e
CO ₃ ²⁻	e	e	e	e	o	h	h	o	—	—	h	h	h	—	—
SiO ₃ ⁻	o	e	e	e	5	h	o	—	h	—	—	h	h	—	—
PO ₄ ³⁻	e	—	e	e	h	h	h	o	h	h	h	h	h	o	h
CH ₃ COO ⁻	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e

Izoh: e — eriydi (100 g suvda 1 g dan ortiq); o — oz eriydi (100 g suvda 1 dan 0,001 g gacha);
h — erimaydi (100 g suvda 0,001 g dan kam); chiziqla — suvda parchalanadi yoki mavjud emas.

7. BUFER ERITMALAR TAYYORLASH

Fosfat-sitrat buferi, pH = 2,2–8,0.

$\text{Na}_2\text{HPO}_4\text{--H}_2\text{O}$, nisbiy molekular massasi 178,05, 0,2 M eritma tayyorlash uchun 35,61 g tuz 1 litr suvda eritiladi.

Sitrat kislota H_2O , nisbiy molekular massasi 210,14, 0,1 M eritma tayyorlash uchun 21,018 g kislota 1 litr suvda eritiladi.

7-jadval

pH	0,2 M Na_2HPO_4 , ml	0,1 M sitrat kislota, ml	pH	0,2 M Na_2HPO_4 , ml	0,1 M sitrat kislota, ml
2,2	0,40	19,60	5,2	10,72	9,28
2,4	1,24	18,76	5,4	11,15	8,85
2,6	2,18	17,82	5,6	11,60	8,40
2,8	3,17	16,83	5,8	12,09	7,91
3,0	4,11	15,89	6,0	12,63	7,37
3,2	4,94	15,06	6,2	13,22	6,78
3,4	5,70	14,30	6,4	13,85	6,15
3,6	6,44	13,56	6,6	14,55	5,45
3,8	7,10	12,90	6,8	14,55	4,55
4,0	7,71	12,29	7,0	16,47	3,55
4,2	8,82	11,72	7,2	17,39	2,61
4,4	8,82	11,18	7,4	18,17	1,84
4,6	9,35	10, 65	7,6	18,23	1,27
4,8	9,86	10,14	7,8	19,15	0,85
5,0	10,30	9,70	8,0	19,15	0,55

Borat buferi (0,2 M), pH = 7,4–9,0.

Natriy tetraborat ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{N}_2\text{O}$). Mol massasi – 381,43. 19,072 g natriy tetraborat tuzi 1 litr suvda eritiladi. Borat kislota molekular massasi 61,840. 12,37 g borat kislota 1 litr suvda eritiladi.

8- jadval

pH	$\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$, 05 M, ml	Borat kislota 0,2 M, ml	pH	$\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}$ 0,05 M, ml	Borat kislota 0,2 M, ml
7,4	1,0	9,0	8,2	3,5	6,5
7,6	1,5	8,5	8,4	4,5	5,5
7,8	2,0	8,0	8,7	6,0	4,0
8,0	3,0	7,0	9,0	8,0	2,0

Asetat buferi (0,2 M), pH = 3,6–5,8.

Natriy asetat, nisbiy molekular massasi 136,09.

9- jadval

pH	Natriy asetat 0,2 M, ml	Asetat kislota 0,2 M, ml	pH	Natriy asetat 0,2 M, ml	Asetat kislota 0,2 M, ml
3,6	0,75	7,25	4,8	5,90	4,10
3,8	1,20	8,80	5,0	7,00	3,00
4,0	1,80	8,0	5,2	7,90	2,10
4,2	2,65	7,35	5,4	8,60	1,40
4,4	3,70	6,0	5,6	9,10	0,90
4,6	4,90	5,10	5,8	9,40	0,60

Tris buferi (0,05 M), pH = 7,2–9,1.

Tris nisbiy molekular massasi 121,14, eritma hajmi distillangan suv bilan 100 ml ga yetkaziladi.

10- jadval

pH		Tris 0,2 M, ml	Xlorid kislota, 0,1 M, ml	H ₂ O, ml
23 °C	37 °C			
7,20	7,05	25	45,0	100 ml gacha
7,36	7,22	25	42,5	100 ml gacha
7,54	7,40	25	40,0	100 ml gacha
7,66	7,52	25	37,5	100 ml gacha
7,77	7,63	25	35,0	100 ml gacha
7,87	7,73	25	32,5	100 ml gacha
7,96	7,82	25	30,0	100 ml gacha
8,05	7,90	25	27,5	100 ml gacha
8,14	8,00	25	25,0	100 ml gacha
8,23	8,10	25	22,5	100 ml gacha
8,32	8,18	25	20,0	100 ml gacha
8,40	8,27	25	17,5	100 ml gacha
8,50	8,37	25	15,0	100 ml gacha
8,62	8,48	25	12,5	100 ml gacha
8,74	8,60	25	10,0	100 ml gacha
8,92	8,78	25	7,5	100 ml gacha
9,10	8,95	25	5,0	100 ml gacha

**8. Aminokislotalarni yupqa qavatli va qog'oz
xromatografiyasi yordamida ajratish koeffitsiyenti**

Aminokislotalar	Turli xil eritmalaridagi qiymati			
Guanin	0,40	0,26	0,17	0,08
Alanin	0,10	0,38	0,24	0,13
Serin	0,11	0,27	0,16	0,08
Sestein	—	0,07	0,08	0,02
Sestin	0,22	0,08	0,05	—
Meteonin	0,79	0,55	0,44	0,25
Treonin	0,49	0,35	0,17	0,13
Valin	0,79	0,60	0,45	0,24
Leysin	0,82	0,73	0,61	0,41
Izoleysin	0,83	0,72	0,59	0,37
Arginin	0,54	0,20	0,10	0,05
Lizin	0,46	0,14	0,08	0,03
Glutamat kislota	0,29	0,30	0,17	0,03
Aspartat kislota	0,13	0,24	0,16	0,02
Fenilalanin	0,84	0,68	0,53	0,34
Tirozin	0,58	0,45	0,24	0,24
Gistidin	0,66	0,20	0,10	0,13
Triptofan	0,75	0,50	0,43	0,17
Prolin	0,88	0,43	0,30	0,13

1 – Fenol – suv (4:1)

2 – N. Butanol – aseton kislota – suv (4:1:1).

3 – N. Butanol – asetat kislota – suv (4:5:5).

4 – N. Butanol – etanol – suv (4:1:4).

9. Past harorat hosil qiluvchi aralashmalar

Tuzlar	Tuzlarning miqdori, g	Qor yoki muz miqdori, g	Maksimal past harorat
MgSO ₄	23,4	100	−3,9
NH ₄ Cl	30,0	100	−15,8
NH ₄ NO ₃	45,0	100	−17,3
NaC	30,4	100	−21,2
NaCl	27,5	100	−33,6
CaCl ₂			
NaCl	41,6		
MH ₄ NO ₃	41,6		
NaCl	41,40,0	100	−30
NH ₄ NO ₃	20,0		

10. 1 litr har xil normallikka ega bo'lgan titrlangan eritmalar ni tayyorlash uchun sarflanadigan moddalarning miqdori

Asosiy birikmalar	Mol massasi	Ekivalent massasi	1 H	0,5 N	0,2 N	0,1 N	0,05 N	0,02 N	0,01 N
H ₂ SO ₄ (zichligi 1,84)	98,08	49,04	28 ml	14 ml	5,6 ml	2,8 ml	1,4 ml	0,56 ml	0,28 ml
NCl (zichligi 1,19)	36,48	35,48	82 ml	41 ml	16,4 ml	8,2 ml	4,1 ml	1,64 ml	0,82 ml
HNO ₃ (zichligi 1,40)	63,02	63,02	67 ml	33,5 ml	13,4 ml	6,7 ml	3,4 ml	1,34 ml	0,67 ml
H ₂ CO ₄ ·2H ₂ O	126,07	63,04	—	—	—	6,3 g	3,15 g	1,26 g	0,63 g
NaOH	40,00	40,00	40,02	20,0 g	8,0 g	4,0 g	2,0 g	0,80 g	0,40 g
KON	56,11	56,11	56,11	28,06 g	11,2 g	5,6 g	2,8 g	1,12 g	0,56 g
Ba(OH) ₂ ·8H ₂ O	3145	157,75 g	78,88 g	31,54	15,77 g	7,88 g	3,15 g	1,58 g	

**11. Qon plazmasi va qon zardobi biokimyoviy
ko'rsatkichlarining fiziologik chegarasi**

Aniqlanuvchi komponent	Tekshiri- luvchi material	Normal kattaliklar		
		An'anaviy birlikda	Hisob- lash koeffit- siyenti	Tavsiya qili- nuvchi birlik (SI)
Adrenalin	Plazma	0,35–0,45	5,458	1,92–2,46 nmol/l
Aminli azot	Zardob yoki plazma	20–35 mkg/l	0,714	14,3–25,6 mmol/l
Ammiakli azot	Qon	25–50 mkg/l	0,714	17,85–35,7
	Plazma	10–30 mkg/l	0,714	7,14–21,42 mkmol/l
Qoldiqli azot	Qon	20–40 mg/100 ml	0,714	14,3–28,6 mmol/l
Tuzli frak- siyalangan albumin	Zardob	3,2–4,5 g/100 ml	10,0	32–45 g/l
	Zardob	3,2–4,6 g/100 ml	0,154	0,49–0,69 mmol/l
Elektroforez albumini	Zardob	3,2–5,6 g/100 ml	0,154	0,49–0,86 mmol/l
Alfa-amino- levulin kislota	Zardob	0,01–0,03 mg/100 ml	76,0	0,76–2,28 mkmol/l
Alfa-anti- ripsin	Plazma	200–400 mg/100 ml	0,1852	37,04–74,08 mkmol/l
sAMF	Plazma	0,25–1,0 mkg/100 ml	30,37	7,6–30,4 nmol/l
Aseton	Qon	0,3 mg/100 ml	172,18	0,5–6,5 mkmol/l
Umumiy oqsil		6,0–7,8 g/100 ml	10,0	60–78 g/l

1	2	3	4	5
Bilirubin: bevosita	Zardob	0,05–0,25 mg/ 100 ml	17,104	0,86–4,3 mkmol
bilvosita	Zardob	0,1–1,0 mg/ 100 ml	17,104	1,7–17,1 mkmol
umumiy	Zardob	0,1–12 mkg/ 100 ml	17,104	1,7–20,5 mkmol
Vitamin A	Zardob	15–60 mkg/ 100 ml	0,035	0,52–2,1 mkmol
Vitamin B ₁	Plazma	1,0–1,5 mkg/100 ml	0,03	0,03–0,045 mkmol
Vitamin B ₂	Qon	12 mkg/100 ml	0,275	0,033 mkmol
Vitamin B ₁₂	Qon	0,06–0,14 mkg/100 ml	7,367	0,44–1,03 nmol
Vitamin C	Plazma	0,6–1,6 mg/ 100 ml	56,776	34,1–90,8 mkmol/l
	Qon	0,7–2,0 mg/ 100 ml	56,776	39,7–113,6 mkmol/l
H (biotin)	Plazma	0,9–1,8 mkg/ 100 ml	40,93	36,8–65,5 nmol/l
H (biotin) B ₆	Plazma	1–18 mkg/ 100 ml	0,059	0,059–1,06 mkmol/l
Galaktoza	Zardob	2–17 mg/100 ml	55,51	111–943,7 mkml/l
Gemoglobin: erkaklarda	Zardob yo plazma Qon	13,5–18,0 g/ 100 ml	0,155	2,09–2,79 mmol/l
ayollarda	Qon	12,0–16,0 g/ 100 ml	0,155	1,86–2,48 mmol/l
Gemopeksin	Plazma	70–30 mg/100 ml	0,125	8.75–16–25 mkmol/l

14-jadvalning davomi

1	2	3	4	5
Gistamin	Qon	0,2–0,8 mkg/ 100 ml	89,93	17,99–71,94 nmol/l
Glikogen	Qon	1,62–3,87 mg/100 ml	10,0	16,2–38,7 mg/l
Globulinlar	Zardob	2,3–3,5 g/100 ml	10,0	23–35 g/l
Glukoza	Zardob yo plazma	70–110 mg/ 100 ml	0,0555	3,88–6,105 mmol/l
Glukoz- aminlar: kattalarda	Zardob	61–78 mg/ 100 ml	0,0558	3,4–4,35 mmol/l
bolalarda	Zardob	52–69 mg/ 100 ml	0,0558	2,9–3,85 mmol/l
Glukuron k-ta	Zardob	1,2–1,3 mg/100 ml	51,506 6	61,81–66,96 mkmol
O't kislotalar	Zardob	0–3,0 mg/100 ml	25,47	0,76–4 mkmol
Temir	Zardob	65–175 mkg/100 ml	0,1791	44,8–80,6 mkmol
Immuno- globulin G	Plazma	800–1800 mg/ 100 ml	0,0625	50–112,5 mkmol
Immuno- globulinlar: A	Plazma	90–450 mg/100 ml	0,0625	5,62–28,12 mkmol
M	Plazma	60–250 mg/ 100 ml	0,01	0,6–2,5 mkmol
D	Plazma	5 mg/100 ml	0,0502	0,26 mkmol
E	Plazma	0,006–0,6 mg/ 100 ml	50,0	0,3–30,0 nmol/l
Indikan	Zardob	0,03–0,08 mg/ 100 ml	39,79	1,19–3,18 mkmol/l
Yod: Bogʻlangan oqsil bilan	Zardob	4,0–8,0 mkg/100 ml	78,796	315,18–630,37 nmol/l

14-jadvalning davomi

1	2	3	4	5
Ekstrallangan butanol	Zardob	3,5-6,5 kg/100 ml	78,796	275,79–512,17 nmol/l
Kaliy	Plazma	3,8–4,6 mg – ekv/l	1,0	3,8–4,6 mmol/l
	Plazma	15–18 mg/100 ml	0,256	3,8-4,6 mmol/l
	Eritro-tsitlar	79,8–99,3 mg-ekv/l	1,0	79,8–99,3 mmol/l
	Eritro-tsitlar	312–388 mg/100 ml	0,256	79,8–99,3 mmol/l
Kalsiy:	Zardob	4,2–5,2 mg/100 ml	0,2495	1,05–1,30 mmol/l
ionlangan	Zardob	2,1–2,6 mg-ekv/l	0,5	1,05–1,30 mmol/l
umumiy	Zardob	9,0–10,6 mg/100 ml	0,2495	2,25–2,64 mmol/l
umumiy	Zardob	4,4–5,2 mg-ekv/l	0,5	2,2–2,6 mmol/l
bolalarda	Zardob	11,0–13,0 mg/100 ml	0,2495	2,74–3,24 mmol/l
Keton tanachalar	Qon	3 mg/100 ml	10,0	30 mg/l
17-ketoste-roidlar	Plazma	25–125 mkg/100 ml	0,0345	0,86–4,31 mk/mol
Kislota-ishqor muvozanati: standart bikarbonat		21–25 mg-ekv/l	10	21–25 mmol/l
Vodorod koʻrsatkichi (pH)	Arteriya qoni	7,36–7,42	1,0	7,36–7,42
	Vena qoni	7,26–7,36	1,0	7,26–7,36
Ortiqcha ishqor (BE)	Plazma	(–2,4)–(+2,3) mg-ekv/l	1,0	(–2,4)–(+2,3) mmol/l

14-jadvalning davomi

1	2	3	4	5
CO ₂ ning parsial bosimi	Arteriya qoni	35,8–46,6 mm s.u.	0,133	4,76–6,2 kPa
	Vena qoni	46–58 mm s.u.	0,133	6,1–7,7 kPa
Kislorodning parsial bosimi	Arteriya qoni	95–100 mm s.u.	0,133	12,6–13,3 kPa
	Vena qoni	40–45 mm s.u.	0,133	5,3–6,0 kPa
Umumiy karbonat anhidrid	Plazma	23–33 mm/l	1,0	23–33 mmol/l
Kortizol: 8–10 soat	Plazma	5–25 mkg/100 ml	27,5885	137,9–689,7 nmol/l
16–18 soat	Plazma	2–18 mkg/100 ml	27,5885	55,2–496,6 nmol/l
Kreatinin: erkaklarda	Zardob yo plazma	0,2–0,6 mg/100 ml	76,2543	15,25–45,75 mkmol/l
ayollarda	Zardob yo plazma	0,6–1–2 mg/100 ml	76,2543	45,75–76,25 mkmol/l
Kreatinin	Zardob yo plazma	0,6–1,2 mg/100 ml	88,4016	53,0–106,1 mkmol/l
Lizotsin	Plazma	0,5–1,5 mg/100 ml	0,6667	0,3–1,0 mkmol/l
Limon kislota	Zardob yoki plazma	0,7 g–3,0 mg/100 ml	52,0481	88,5–156,1 mkmol/l
Umumiy yog‘lar	Zardob	400–800 mg/100 ml	0,01	4,0–8,0 g/l
Yog‘ kislotalar: umumiy	Zardob	9–15 mm/l	1,0	9–16 mmol/l
	Plazma	640–880 mkg-ekv/l	1,0	640–880 mkmol
	Plazma	640–880 mkg-ekv/l	1,0	640–880 mkmol
	Plazma	780–1180 mkg-ekv/l	1,0	780–1180 mkmol
Triglitsyeridlar:	Zardob yoki plazma	50–150 mg/100 ml	0,0118	0,59–1,77 mmol/l

14-jadvalning davomi

1	2	3	4	5
Fosfolipidlar: umumiy	Zardob	152,5–362,5 mg/100 ml	0,01	1,52–3,62 g/l
Fosfor- nisbatan	Zardob	6,1–14,5 mg/ 100 ml	0,3223	1,97–4,68 mmol/l
Umumiy xolesterin	Plazma	115–340 mg/ 100 ml	0,258	2,97–8,79 mmol/l
Alfa lipopro- teidlari erkaklarda	Plazma	125–425 mg/100 ml	0,01	1,25–4,25 g/l
ayollarda	Plazma	250–650 mg/ 100 ml	0,01	2,5–6,5 g/l
Beta-lipo- proteidlar	Plazma	300–450 mg/100 ml	0,01	3,0–4,5 g/l
Magniy	Zardob	1,5–2,5 mg-ekv/l	0,5	0,75–1,25 mmol
Alfa- makroglobulin	Plazma	150–350 mg/ 100 ml	0,0122	1,83–4,27 mkmol/l
Mis: erkaklarda	Zardob yoki	70–140 mkg/ 100 ml	0,1574	11,0–22,0 mkmol/l
ayollarda	Plazma	85–155 mkg/ 100 ml	0,1574	13,4–24,4 mkmol/l
Metgemo- globin	Qon	0,0–0,24 g/ 100 ml	155,0	0–37,2 mkmol/l
Sut kislotasi	Arteriya qoni	3–7 mg/ 100 ml	0,111	0,33–0,78 mmol/l
	Vena qoni	5–20 mg/ 100 ml	0,111	0,55–2,22 mmol/l
Siydik kislota: erkaklarda	Zardob	2,1–7,8 mg/ 100 ml	0,0594	0,12–0,46 mmol/l
ayollarda	Zardob	2,0–6,4 mg/ 100 ml	0,0594	0,12–0,38 mmol/l

14-jadvalning davomi

1	2	3	4	5
Siydikchil	Qon	20–50 mg/ 100 ml	0,1665	3,33–8,32 mmol/l
Natriy	Plazma	134–169 mg-ekv/l	1,0	134–169 mmol/l
	Plazma	310–290 mg/ 100 ml	0,4345	134–169 mmol/l
	Eritro- tsitlar	31–50 mg/ 100 ml	0,4345	13,4–21,7 mmol/l
	Eritro- tsitlar	13,4–21,7 mg-ekv/l	1,0	13,4–21,7 mmol/l
Neyramin kislotasi	Zardob	65 mg/100 ml	32,3311	2101 mmol/l
Noradrenalin	Plazma	0,65–0,81 mkg/100 ml	59,11	38,42–47,88 nmol/l
P-oksikortiko- steroidlar	Plazma	13–23 kg/ 100 ml	10,0	130–230 mkg/l
17-oksikorti- kosteroidlar erkaklarda	Plazma			
	Plazma	7–19 mkg/ 100 ml	27,5886	193, 12– 524,18 nmol/l
ayollarda	Plazma	9–21 mkg/ 100 ml	27,5886	248,3–579, 36 nmol/l
Beta-yog‘- oksikislotasi	Qon	0,14–1,9 mkg/100 ml	96,05	13,4–182,5 mkmol/l
Pirouzum kis- lotasi	Qon	0,3–0,9 mkg/ 100 ml	113,56	34,07–102,2 mkmol/l
Plazminogen	Plazma	20–40 mkg/ 100 ml	0,07	1,4–2,8 mkmol/l
Prealbumin	Plazma	10–40 mkg/ 100 ml	0,1639	1,64–6,56 mkmol/l
Protoporfirin	Eritro- tsitlar	15–50 mkg/ 100 ml	0,0178	0,27–0,89 mkmol/l
Qand	Qon	80–120 mg/ 100 ml	0,01	0,8–1,2 g/l

14-jadvalning davomi

1	2	3	4	5
Sial kislotalar	Zardob	55–79 mg/ 100 ml	10,0	550–790 ml/l
Serotonin	Qon	5,0–30,0 mkg/100 ml	0,0568	0,3–1,7 mkmol/l
Somatotropin	Zardob	10 mg/ml	0,0465	0,47 nmol/l
Testosteron: erkaklarda	Zardob yoki plazma	400–1200 mg/100 ml	0,0347	13,8–41,6 nmol/l
ayollarda	Zardob yoki plazma	30–120 mg/ 100 ml	0,0347	1,04–4,16 nmol/l
Tireoglobulin	Zardob	10–26 mkg/ 100 ml	10,0	100–260 mkg/l
Umumiy tiroksin		5–11 mkg/ 100 ml	12,872	64.36–141, 59 nmol/l
Transferrin	Zardob	170–400 mg/100 ml	0,1136	19,3–45.4 mkmol/l
Fenilalanin: kattalarda	Zardob	3 mg/100 ml	0,0605	0,18 mmol/l
chaqaloqlarda	Zardob	1,2–3,5 mg/ 100 ml	0,0605	0,073–0,212 mmol/l
Fibrinogen	Plazma	200–400 mg/ 100 ml	6,0293	5,9–11,7 mkmol/l
Noorganik fosfor: kattalarda	Zardob	2–4 mg/ 100 ml	0,3228	0,64–1,29 mmol/l
bolalarda	Zardob	4–7,1 mg/ 100 ml	0,3228	1,29–2,26 mmol/l
Fruktoza	Qon	0,1–0,5 mg/ 100 ml	55,8	5,55–7,75 mkmol/l
Fukoza	Zardob	7,7–0,9 mg/ 100 ml	60,9156	469,05– 548,24 mkmol/l
Xloridlar	Qon	295 mg/100 ml	0,282	83,19 mmol/l
	Zardob	95–103 mg-ekv/l	1,0	95–103 mmol/l
Seruloplazmin	Zardob	23–50 mg/ 100 ml	0,0662	1,52–3,31 mkmol/l

15. Insulinning tuzilish sxemasi

30 ta aminokislota
qoldig'i

(NH₂) FEN ————— ALA (COOH)

S S

S S

(NH₂) GLI ————— ASPN (COOH)

21 ta aminokislota
qoldig'i

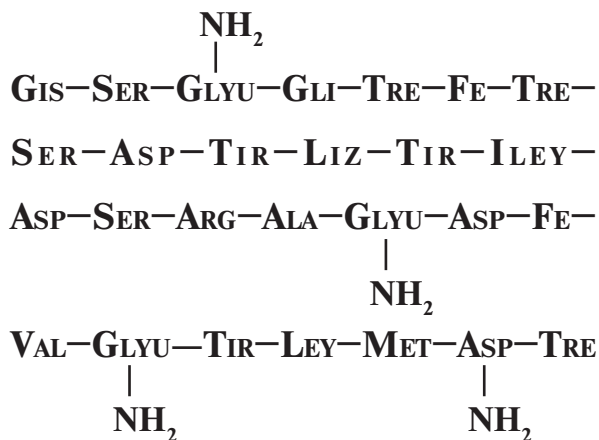
Insulin molekulasi birlamchi tuzilishi

The diagram illustrates the primary structure of the insulin molecule, consisting of two polypeptide chains, A and B, connected by disulfide bonds. Chain A (top) contains 21 amino acids, and Chain B (bottom) contains 30 amino acids. The amino acids are represented by circles with their three-letter codes. Disulfide bonds are shown as thick black bars between specific amino acids in the two chains.

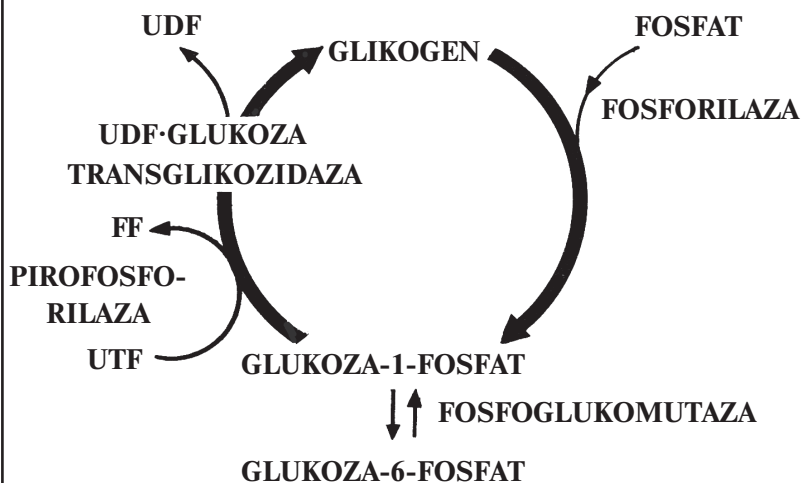
Zanjir A (Chain A): 21 amino acids. Sequence: 1. gly, 2. ile, 3. val, 4. glu, 5. glut, 6. asn, 7. ser, 8. thr, 9. leu, 10. tyr, 11. glu, 12. asp, 13. aspartic acid, 14. aspartic acid, 15. aspartic acid, 16. aspartic acid, 17. aspartic acid, 18. aspartic acid, 19. aspartic acid, 20. aspartic acid, 21. aspartic acid.

Zanjir B (Chain B): 30 amino acids. Sequence: 1. phe, 2. val, 3. leu, 4. thr, 5. pro, 6. thr, 7. thr, 8. thr, 9. thr, 10. thr, 11. thr, 12. thr, 13. thr, 14. thr, 15. thr, 16. thr, 17. thr, 18. thr, 19. thr, 20. thr, 21. thr, 22. thr, 23. thr, 24. thr, 25. thr, 26. thr, 27. thr, 28. thr, 29. thr, 30. thr.

16. Glukagonning birlamchi tuzilishi



17. Glikogenning parchalanish va sintez sxemasi



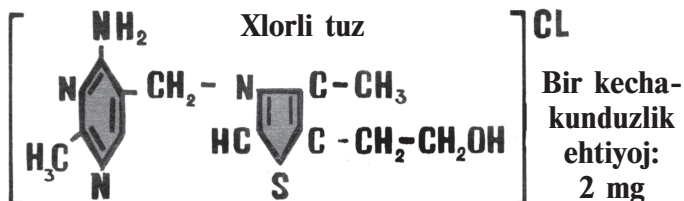
18. VITAMINLAR

VITAMIN B

(Polinevritga qarshi — tiamin)

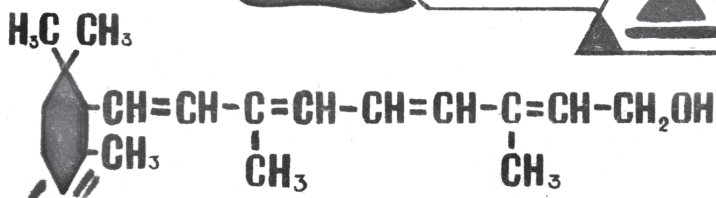
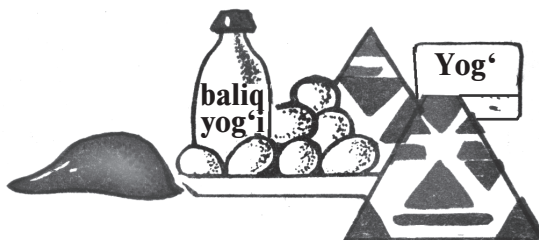


Xamirturish



VITAMIN B₁

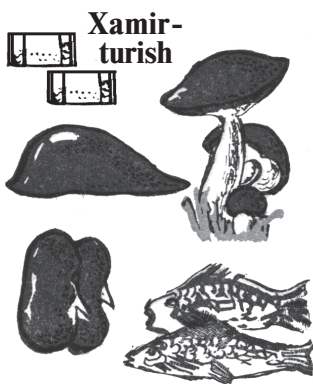
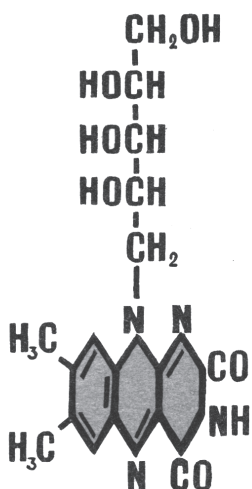
(Shabko'rlik — retinol)



Ehtiyoj: 1–2,5 mg

VITAMIN B₂

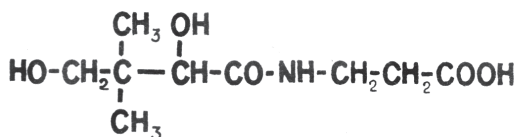
(O'sish vitamini — riboflavin)



Bir kecha-kunduzlik ehtiyoj:
2—3 mg

VITAMIN B₃

(Pantoten kislota)

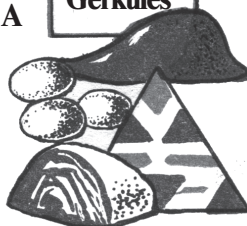


Pantoten kislota
koenzim A tar-
kibiga kirib, asil
radikallarini olib
o'tishda qatnashadi

— Butitilkoenzim A

Asetilkoenzim A

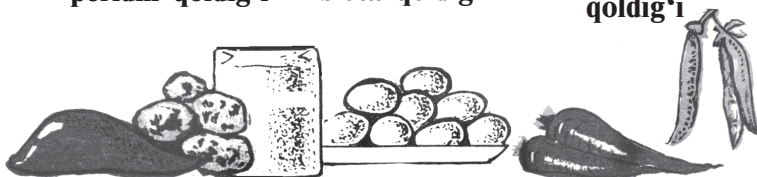
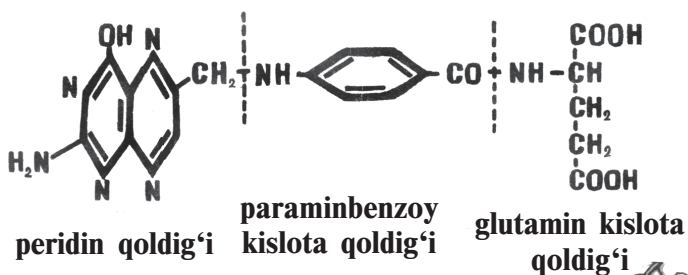
↙
Suksinilkoenzim A



Bir kecha-kunduzlik ehtiyoj: 10 mg

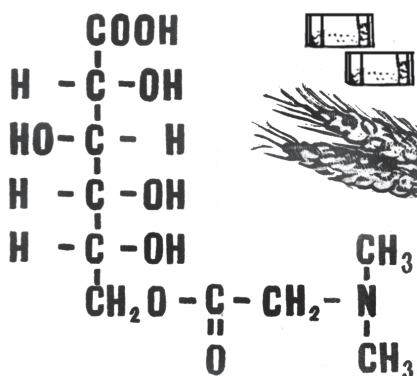
VITAMIN B_C

(Anemiyaga qarshi – folein kislota)

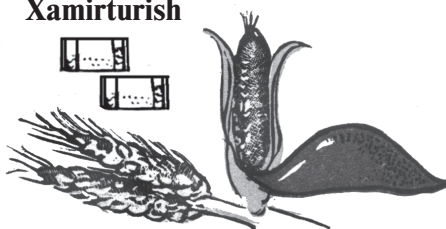


VITAMIN B₁₅

(Pangamin kislota – to'qimada kislorod kamchiligiga qarshi)



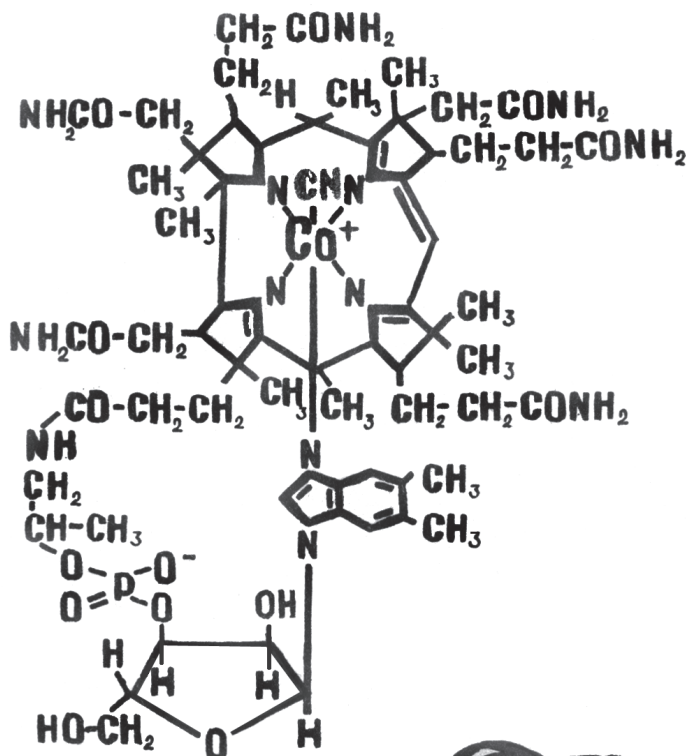
Xamirturish



Ehtiyoj: 2 mg

VITAMIN B₁₂

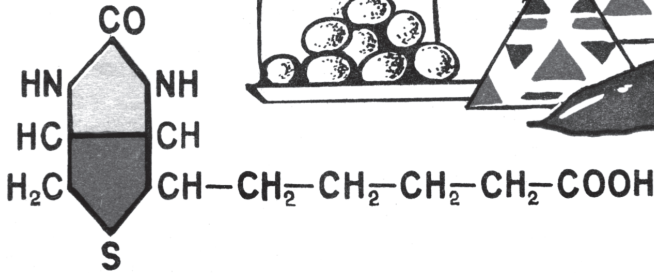
(Sianokobalamin – anemiyaga qarshi)



Bir kecha-kunduzlik ehtiyoj: 0,001 mg

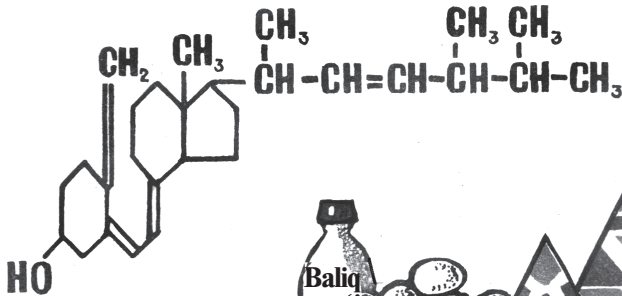
VITAMIN H (Biotin)

Ehtiyoj: 0,01 mg



VITAMIN D₂ (Ergokalsiferol)

PROVITAMIN-ERGOSTERIN

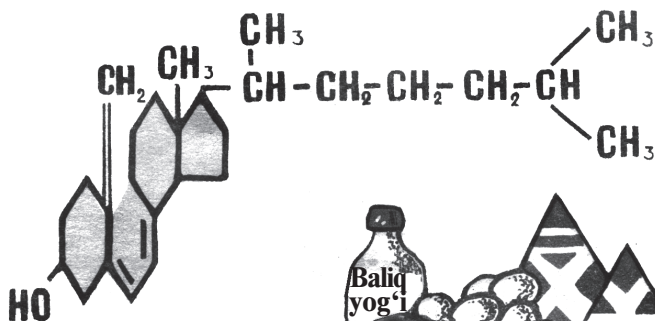


Bir kecha-
kunduzlik ehtiyoj:
0,013–0,025 mg

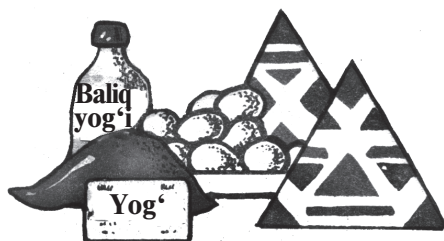


VITAMIN D₃ (Xolikalsiferol)

PROVITAMIN-7- DEGIDROXOLESTERIN

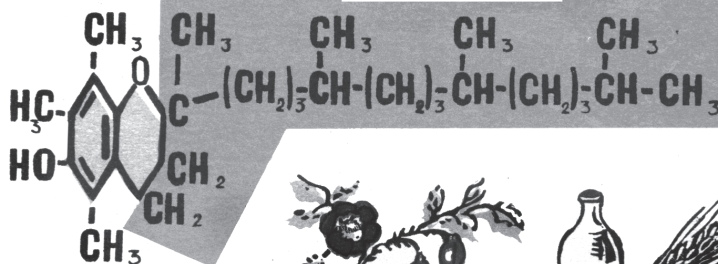


Bir kecha-
kunduzlik ehtiyoj:
0,013–0,025 mg

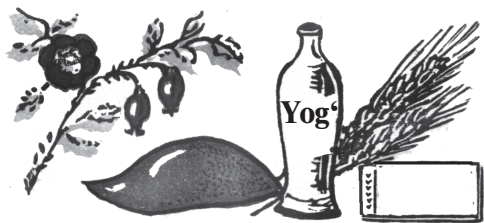


VITAMIN E₂ (Naslsizlikka qarshi – α-tokoferol)

Fitol qoldig'i



Bir kecha-
kunduzlik ehtiyoj:
30 mg



Xamirturish

VITAMIN PP (Pellagra qarshi — nikotinamid)

OC(=O)c1cccnc1

Nikotin
kislotasi

NC(=O)c1cccnc1

Nikotin
kislotasining
amidi

Bir kecha-
kunduzlik ehtiyoj:
15–25 mg

Xamir-
turish

Loviya

Guruch

VITAMIN K₁
(Gemmaroyga qarshi – naftoxinon)

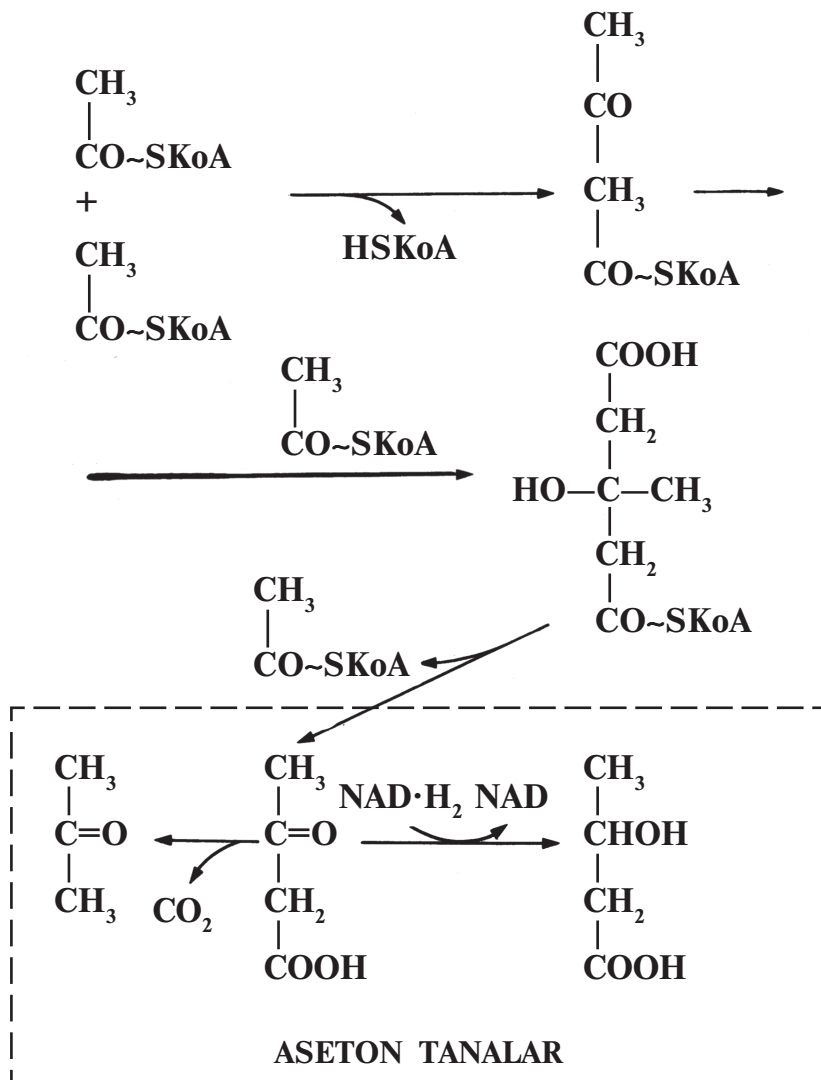
Bir kecha-kunduzlik ehtiyoj:
10–15 mg

Achib boradigan baliqdan tayyorlangan un.

Qichitqioʻt

The diagram shows two chemical structures. On the left is the structure of Vitamin K₁ (naftoxinon), which consists of a naphthalene ring system with two carbonyl groups at positions 1 and 4, and a side chain at position 2 consisting of a methylene group followed by four methyl-substituted methylene groups. On the right is the structure of gamma-carboxydecanoic acid, which is a straight-chain dicarboxylic acid with a carboxyl group at each end and four methyl substituents along the chain.

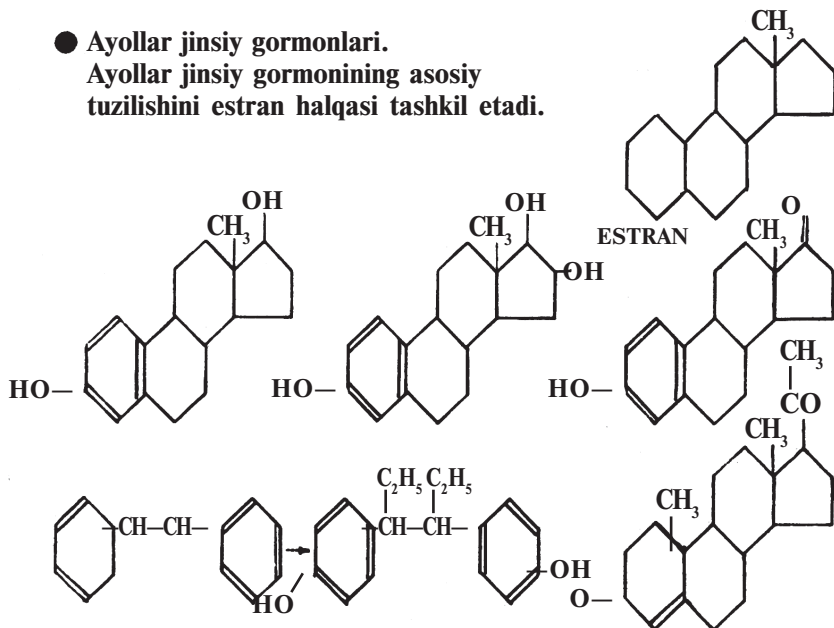
19. ASETON TANALARI SINTEZI



20. JINSIY GORMONLAR

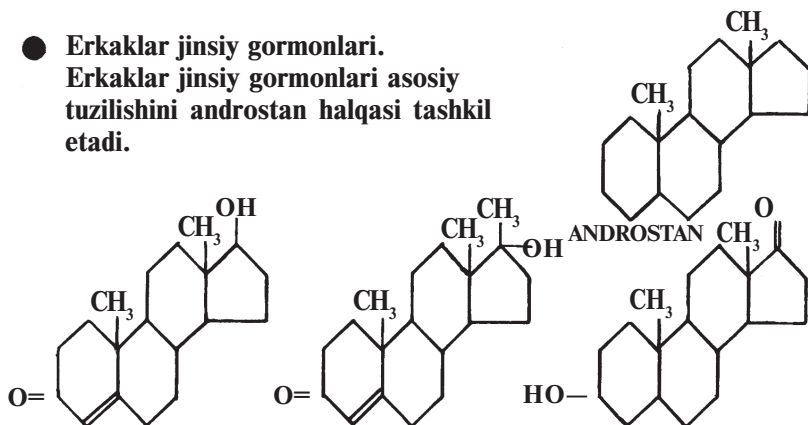
● Ayollar jinsiy gormonlari.

Ayollar jinsiy gormonining asosiy tuzilishini estran halqasi tashkil etadi.



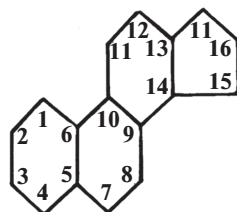
● Erkaklar jinsiy gormonlari.

Erkaklar jinsiy gormonlari asosiy tuzilishini androstan halqasi tashkil etadi.

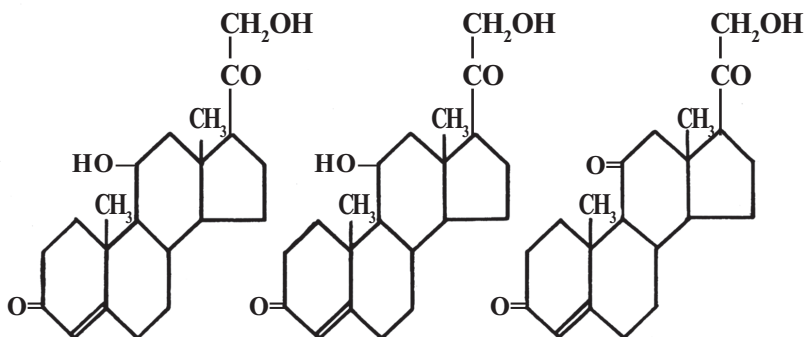


21. BUYRAKUSTI PO'STLOG'I GORMONLARI

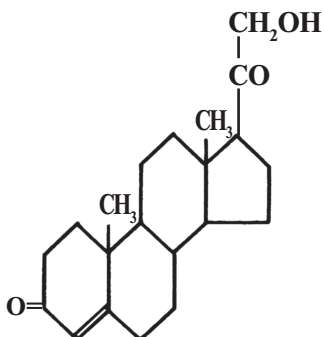
Siklopentanpergidrofenantren
buyrakusti po'stlog'i gormonlari
asosiy tuzilishini tashkil qiladi



● glukokortikoidlar



● mineralokortikoidlar



● gluko- va mineralo- kortikoidlar

