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Early diagnostics of a breast cancer

The analysis of the primary medical documentation and the questioning data of women with breast cancer are carried out. It is found out that patients with a disease incipient stage (I-IIA) regularly passed professional surveys and consultations of the gynecologist. With augmentation of a cancer stage (IIB-III A) the quantity of women, to whom preventive examinations were not made or were made formally, increases.

Keywords: breast cancer, preventive examinations, early diagnostics.

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**MICRONUTRITION STATUS of PREGNANT and THEIR NEWBORN
CHILDREN**

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To reveal the condition of a mineral exchange, the estimation of 22 chemical elements in hair of 102 not pregnant, 50 pregnant and their newborn, living in Yakutsk was carried out. Macro- and microelement structure of pregnant women hair was more changed especially there were authentically low levels of cuprum, phosphorus, iodine. Accumulation of microelements in a newborn organism is connected with the phenomenon of "superstorage", thus essentielle microelements are not collected.

Key words: pregnant, newborn, microelements.

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Introduction. The important role of microelements (ME) in life activity of a human doesn't give rise to doubt. For last years the considerable number of the researches devoted to investigation of impact of trace substance on metabolism has congested [2, 5]. The occurrence of imbalance of trace substance of inhabitants of several areas is governed by biogeochemical distinctions and man-made pollution has detected [4].

It is known that children and gravidas are more amenable to sickness allied with disorder of mineral turnover. Children's body is peculiar marker medication of hypersensitivity of the body to condition surroundings. The children's level of health is one of the most sensitive index reflecting changes of environment's quality [4]. In the first place unfavorable conditions of environment pose a hazard to children who because of morph functional immaturity are notable for hypersensitivity to defective or supernumerary inflow of chemical elements from without [5]. Hereby the problem of search of deficit and imbalance of macro- and microelements at pregnant women and children of North is actual and serves as a methodical base for conduction ecophysiological searches.

Objective: Observation macro-and-micro elemental composition at the system "mother – newborn" into conditions of Yakutsk.

Materials and methods: As biologic test subject hair is the most appropriate material for medical and ecological experimentation and also is possessed of advantage in comparison with other biosubstrates. It is simple indolent and available for the mass searches. The inspection is noninvasive that eliminate the risk of dangerous contact with AIDS, hepatitis etc. The inspection of 102 not pregnant women and 50 pregnant women and their newborn children including questioning and search of content of 22 chemical elements (Al, B, Ca, Cd, Co, Cr, Cu, Fe, Hg, K, Li, Mg, Mn, Na, Ni, P, Pb, Se, Si, Sn, Ti, V, Zn) in hair was carried out. The prescription of women's home in that city averages from 6 to 35 years. Their professional activity was never connected with unhealthy works.

Analytical searches are done by method of atomic emission spectrometer and mass spectrometry with inductively bound argon plasma (АЭС-ИСП, МС-ИСП) in laboratory of Centre of Biotic Medicine in Moscow city (certificate of accreditation ГЦЭН РУ ИОА.311, registration number in State register ПОСС RU.0001.513118 date May of 29, 2003).

Results and discussion.

For detection of features of mineral composition in hair of pregnant women the pair wise comparison of average value of examined index with reference values using in the capacity of standards in Centre of Biotic Medicine (Moscow), also recommendation of P. Bertram (1992) was carried out. Data analysis showed essential differences of hair's chemical composition (Chart 1).

Contents of copper, phosphorus, iodine at the pregnant women of Yakutsk city were below limits of biologically tolerance level (BTL), index of calcium, cobalt, magnesium is on the lower bound. The reduction of content of copper, phosphorus, iodine at the body of gravidas conform with population rate of deficit of that micro elements [2, 3, 6].

For pregnant women of Yakutsk city living in extreme climatic geographic conditions the frequency of occurrence of deficits and redundancies was calculated, essential deformation of elemental profile was ascertained cause various degree of deficit of many biogenic elements. The elemental state is characterized by prevalence of low content of I (95%), Cu (77,5%), Co (65%), Mg (55%), P (47,5%), K (40%), Ca (20%), Se (17,5%) in hair.

Except low content of some bioelements at pregnant population the increased content of silicon was revealed in hair. The evidence conform with previously published facts of Shitz I.V. (2006). The frequency of occurrence of silicon's plenty is 55% that makes it possible to refer observable territory of Yakutsk city to vast silicon biogeochemical province.

Hyperelementozas are occurred with major frequency at pregnant women. The content of potassium, manganese, sodium, phosphorus exceeds BTL (Chart 2).

The distinctive features of elemental state of pregnant in comparison with not pregnant living in Yakutsk are reliable distinctions by Al, B, Ca, Cr, Cu, Fe, Hg, Na, Ni, P, Pb, Sn, V aside the reduction at pregnant. The depletion of the mother's body by macro-and micro elements is connected with accumulation of it in tissues and organs of fetus [1].

The content of macro- and micro elements in test of newborn children's hair in Yakutsk considerably differs from "background" facts (mineral composition of newborn children's hair in Moscow). In analysis there is imbalance of chemical elements expressing in reduction of essential element like cobalt also ratio distortion of electrolytes as prevalence of sodium over potassium (Chart 3). There is redundant storage of iodine, potassium, sodium, phosphorus, silicon. In hair there is sharp predominance of sodium over potassium, calcium, magnesium that can be indirect evidence of elevation of tissue's hydrophilia and hypoxic shift of electrolytic exchange. Supernumerary content of potassium can be regarded as a factor of immaturity, insufficient differentiation of tissues, organs and systems [4].

The rate of registration of low values about advisable physiological norms was established by index of calcium (97,7%), sodium (97,7%), magnesium (91,%), zinc (75,5%), potassium (64,4%), phosphorus (53,3%), chromium (46,6%), manganese (40%), selenium (17,7%) at newborn children.

The finding of inspection pairs “mother-newborn” shows reliably high level at newborn children such elements like: Al, Ca, Cd, K, Li, Mg, Mn, Pb, V. The given elements are increased in 2 and more times. In the body the metals and macro elements are accumulated and from essential micro elements the zinc is stored. The accumulation in the body of newborn contacts with occurrence “superreserving” because of high requirement during the time of antenatal and postnatal development. Not only essential micro elements is accumulated but also toxic in limits of biologically allowable level at low contents of it at mother.

Apparently from the diagram (pic.a), a condition hypoelementozas are found more at pregnant women. To significant elementozas which occur at the pregnant women and her newborn it is possible to attribute reduction of copper (at 77,5 % of pregnant and 88,8 % of newborn children). The most significant hyperelementozas are registered only at newborn (pic.B). At the body of newborn metals and macro elements accumulate, from essential micro elements zinc accumulates .

Received thus « the element portrait » allows to present an element structure of examined pregnant and their newborn children of Yakutsk more visually. Element structures of pair "mother - newborn", elements containing in numerator, which contents in hair redundant, and in a denominator is insufficient (tab. 4) are below given. The frequency of concerning the increased contents of silicon and concerning the low contents of copper were observed in group of pregnant and newborn children.

Conclusions. The features of the state of women of Yakutsk in III term of pregnancy are reduction of the contents of copper, phosphorus, iodine and the increased contents of silicon. The element state of pregnant women authentically differs from not pregnant following essential micro elements Cr, Cu, Fe, the given micro elements also are reduced at newborn. At the body of newborn the metals and microelements accumulate. Increase of a level of silicon at the body of mother is accompanied by increase also at newborn. Downturn of a level of copper at the body of mother is accompanied by reduction of the contents also at newborn.

The comparative analysis of the contents of chemical elements (mkg / ú) in hair of pregnant
Yakutsk with the reference values

Element	Mothers n=45	Biologically allowable level (БДУ) 1	
		Lower bound	Upper bound
	M±m		
Al	2,22±1,6	0	40
B	0,58±0,32	0	5
Ca	771±379	600	3000
Cd	0,009±0,01	0	0,25
Co	0,02±0,03	0,01	0,5
Cr	0,24±0,05	0,15	1
Cu	9,69±1,31 *	11	17
Fe	20±13	10	50
Hg	0,56±0,35	0	2
I	0,19±0,22 *	0,3	10
K	97,28±242,71	25	110
Li	0,043±0,15	0	0,1
Mg	69±55	60	200
Mn	1,18±1,73	0,25	1,8
Na	159±167	50	250
Ni	0,19±0,09	0	2
P	138±21 *	140	170
Pb	0,15±0,10	0	3
Se	0,41±0,2	0,2	1,8
Si	56±26 *	13	50
Sn	0,11±0,1	0	2,5
V	0,02±0,006	0	0,3
Zn	231±67,5	180	230

The note: * - values of a median below and above БДУ are allocated

1 - V.A.Demidov, A.V. Skylnyi, 2001

Chart 2

The average contents of chemical elements in hair of pregnant and not pregnant women of
Yakutsk, (mkg / ú)

Element	Pregnant n=50	Women n=102	Element	Pregnant n=50	Women n=102
Al	2,22±1,6*	9,64±1,04	Mg	69±55	191±23
B	0,58±0,32*	0,8±0,14	Mn	1,18±1,73	2,62±0,27
Ca	771±379*	1700±186	Na	159±117*	527±126
Cd	0,009±0,01	0,08±0,01	Ni	0,19±0,09*	0,57±0,05
Co	0,02±0,03	0,05±0,01	P	138±21*	217±61
Cr	0,24±0,05*	0,52±0,05	Pb	0,15±0,10*	2,2±0,54

Cu	9,69 - 1,31*	13,37±0,91	Se	0,41±0,2	0,39±0,04
Fe	20±13*	25,06±1,53	Si	56±26	49±6,64
Hg	0,56±0,35*	1,2±0,2	Sn	0,11±0,1*	0,63±0,11
K	97,28±242,71	295±52	V	0,02±0,006*	0,06±0,01
Li	0,043±0,15	0,09±0,026	Zn	231±67,5	195±8

The note: * - reliability of distinctions ($p < 0,05$)

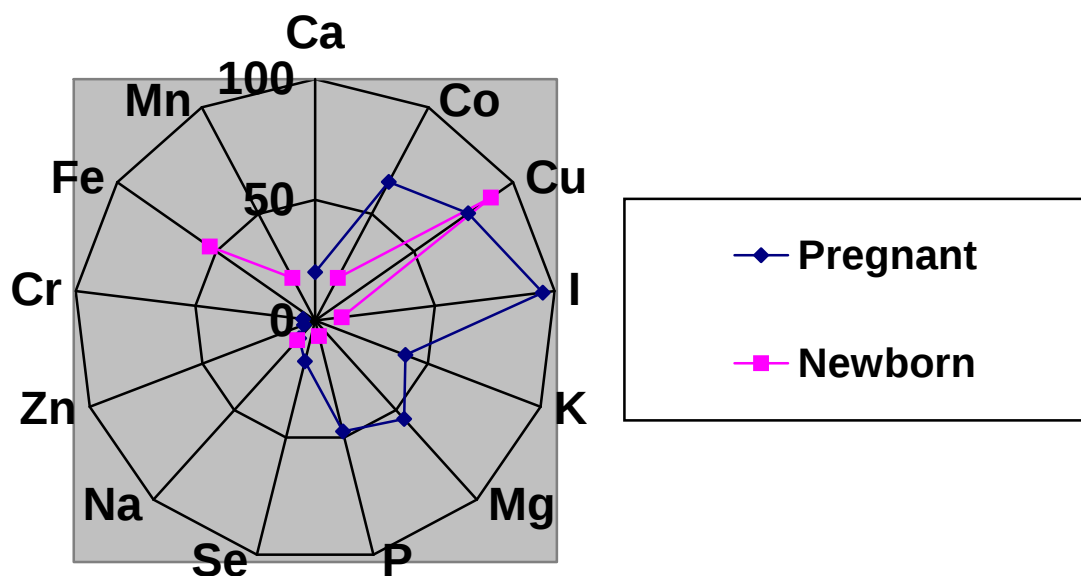
Chart 3

The comparative analysis of the contents of chemical elements (mkg / ú) in hair of newborn of Yakutsk with the referent values

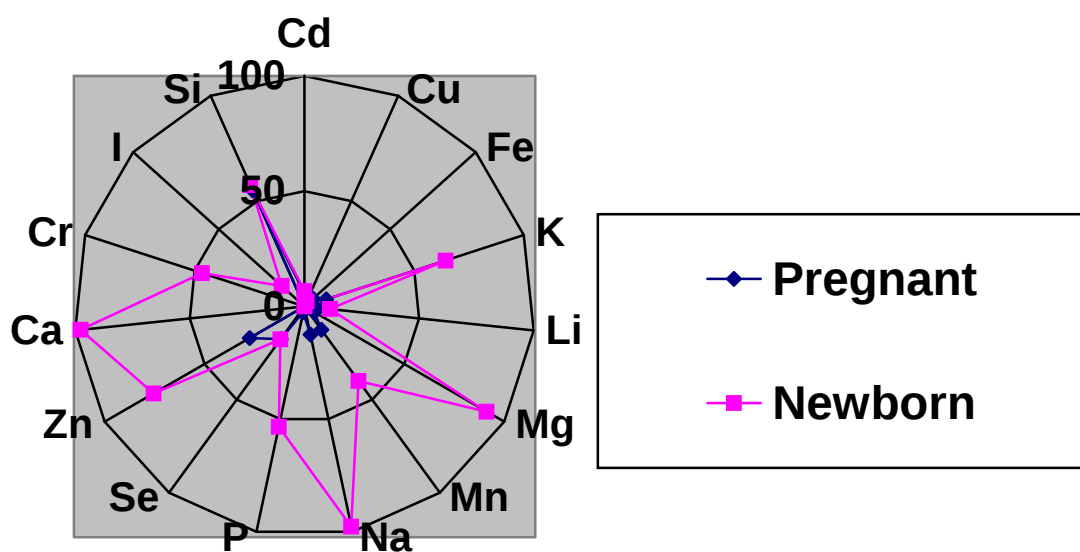
Element	Newborn n=45	Biologically allowable level (БДУ) 1	
	M±m	The bottom border	The top border
Al	3,23±2,7	2,0	40,0
B	3,87±4	0	5,0
Ca	1500±545	200	1500
Cd	0,08±0,16	0	0,5
Co	0,019±0,01 *	0,2	1,0
Cr	0,94±0,52	0,5	1,5
Cu	7,57±2,22	6,5	15,0
Fe	32,49±16,79	15,0	50,0
Hg	0,64±0,38	0	1,0
I	18,85±69,23*	0,3	10
K	2722±1892*	340	1900
Li	0,053±0,13	0	0,1
Mg	118±73	25	120
Mn	2,19±5,83	0,5	3,0
Na	3599±2109*	210	800
Ni	0,57±0,5	0	2
P	195±126*	120	160
Pb	1,44±4,6	0	5,0
Se	1,32±0,45	0,8	3,0
Si	46±10*	5	30
Sn	0,14±0,22	0	2,5
V	0,22±0,14	0	0,5
Zn	212,43±65,69	125	250

The note: * - values of a median below and above BTL are allocated

1 - V.A.Demidov, A.V.rocky, 2001



a)



b)

Pic. Frequency of registration hyperelementozas (á), hyperelementozas (á) at pregnant and their newborn children of Yakutsk, ()

Chart 4

The redundant and insufficient contents of elements at pregnant and their newborn children in Yakutsk.

Pair « mother - the child »	Element structures	
	Surplus	Lack
Pregnant	Si	I, Cu , Co, Mg, P, K
Newborn	Ca, Cr, To, Mg, Mn, Na, P, Si , Zn	Cu , Fe

The note: elements are included, frequency of deviations in which contents exceeds 30 %.

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