

normal body weight. The samples were obtained by swabbing the cheeks surface inside the mouth. The collections were stained by methylene blue and mean of the attached microbial cells were calculated from observations of 5 buccal cells with microbes attached in 3 slides for each person under light microscope. In parallel, selective media were swabbed to isolate cocci and yeasts.

We observed the yeasts cells at the level  $7.4 \pm 0.8$  per epithelial cell in patients with obesity. They were visible for 23 patients. Bacterial coccal forms were observed for all patients in quantity of  $19.2 \pm 0.8$  cells per epithelial cell.

Only smears of 11 normal weight volunteers demonstrated yeasts in glass slides preparations at a level of  $2.5 \pm 0.7$  cells per epithelial cell. The cocci were observed in all patients in quantity of  $9.2 \pm 0.9$  per cells epithelial cell. Thus, the exfoliated buccal cells of people with normal weight where less colonized.

To verify if this observed due to cell surface properties, the buccal cells were washed by centrifugation (1000 r. p. m., 10 min) and resuspending in sterile saline solution 3 times followed by filtration trough  $8 \mu\text{m}$  pore size filter. Then, saline suspensions  $10^4$  buccal cells/mL (by haemocytometer) were mixed with same volume of the saline suspensions  $10^7$  cells/mL (by optical density) of isolated strains of *Candida* or *Staphylococcus* providing 100 cells of yeasts or bacteria per 1 epithelial cell. The  $20 \mu\text{L}$  drops of the suspensions on glass slide were incubated for 15 min at  $37^\circ\text{C}$  and examined in microscope for epithelial and microbial cells interaction. The microscopy reviled no difference in microbial attachment of *Candida* cells  $36.1 \pm 0.5$  and  $34.3 \pm 0.7$  or *Staphylococcus* cells  $27 \pm 0.4$  and  $26 \pm 0.8$  per epithelial cells between obesity and normal groups, respectively. Thus, the nature of the obesity people's diet (more nutrients, e.g, carbohydrates), and not their epithelial cells properties resulted in higher number of microbes attached to squamous epithelium surface of the mouth.

## **INTERHEMISPHERICAL ASYMMETRY INDIVIDUAL PROFILE, PSYCHOLOGICAL AND PSYCHIC DISTURBANCIES AND PECULIARITIES AS WELL AS OTHER HEALTH PROBLEMS**

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Sinistrality belongs to such a phenomenon rate and importance of which got increased during last years (sinisters amount together with ambidexters is approximately 20%). Interest to sinistrality as a phenomenon grows in many branches of theoretical and practical medicine. Left-handers change their hand-use easier than right-handers [49] do and it is known that such changes are not good for study, health, brain functioning (manual skills, speech in part) [46]. When grasping the tool, younger infants are more influenced by their hand preference than older infants, who are better at anticipating the most successful strategies [55]. Handedness is studied in twins [52].

The beginning age of epilepsy is earlier for the left-handers, electroencephalography patterns do not depend on the beginning age, febrile states, the disease presence in the family, sinistrality and other factors in them (comparatively to the dexters where these factors are influential) [31]. Some doctors consider that epilepsy is wider-spread in left-handers than in right-handers [67]. Intellectual disability in children is considered to be connected to the sinistrality [41] and dyslexias as well as though some scientists consider it only as special way of the people's reading [19]. Some scientists think that apraxy (impossible skills development) is delt to sinistrality while the others link its hardness with dexterity on the contrary [26]. Opinions as for trisomy 21 are also not one-digit. Some scientists think that its distribution is bigger in the left-handers [12; 21], the others — in right-handers [37; 18]. There was a research of Down syndrome suffered children from Iran comparatively to healthy right-handers on their language perception laterality pattern [34]. Other chromosomal aberrations are also thought to be more distributed in the left-handers comparatively to the right-handers [11].

Ambidextrism or mixed-handedness is rather "non-comfortable" state for human being because he/she "can not decide what hemisphere to use". They can have language, scholastic, and mental health problems in a childhood and that these persist into adolescence [56]. They have atrophy of hippocamp and amygdale in old people [13]. According to some data having been received in Austria [35], shizophreny is observed more in men dexters and women ambidexters; other Australian scientists [16] determined direct link between ambidextrism and shizophreny; though there are the data of Taiwan scientists [69] that this disease is met in bigger extent in left-handers with increased risk in sinisters men and ambidexters, as Japanese scientists demonstrated [27]. One can say about cross-cultural character of shizotype in ambidexters [32].

Autism can be described as a disease of left-handers [54; 2] together with prozopagnosies (faces disordered recognition) [9], mirror writing (English scientists study this phenomenon much) [63].

There is a hypothesis about pathological right-handedness: temporal epilepsy is accompanied by early damaging the right hemisphere that leads to left hand hypofunction in real weak right-handers that makes them to switch strong right-handedness on. It can be, to the Korean scientists point of view, the first statement for mentioned hypothesis [36]. There is a description of so-called Gerstmann syndrome (dyscalculia, dysgraphia, left-right confusion, finger agnosia) in right-handers by scientists from the USA [5], France [58]. One American scientist includes semantic aphasia instead of agraphia in this syndrome [3]. Severe disorder of right-handed including somatoparaphrenia or very big mistakes in body and body parts imaging was described by the scientists from Switzerland [53].

Central role of hypothalamic digoxin in conscious perception, neuroimmunoendocrine integration, and coordination of cellular function is discussed [40]. The levels of tyrosine, dopamine, noradrenaline, and morphine were low in left-handed/RH dominant compared to right-handed/LH dominant individuals. The hyperdigoxinemic state indicates right hemispheric dominance. Hypothalamic digoxin can thus function as the master conductor of the neuro-immune-endocrine orchestra and coordinate the functions of various cellular organelles. Digoxin, an endogenous Na(+)-K+ ATP-ase inhibitor secreted by the hypothalamus, was found to be elevated and red blood cell (RBC) membrane Na(+)-K+ ATP-ase activity was found to be reduced in all the disorders

such as schizophrenia, neoplasms, syndrome X, rheumatoid arthritis and epilepsy, increased at Parkinson's disease [39] and autism [38].

It is clear now that sinisters have their own diseases and states [47], other diseases have peculiarities in them (tendency to recidivating, harder and atypical course as well as lethal end bigger percentage). According to English-language literature, "left" diseases comprise homosexuality [23], hypersexuality (in part at Kleinfelter's syndrome), reproductive non-success in left-handed men [59], lesbianity, virilism, menstrual and pregnancy disorders in women (because left hemisphere responsible for cyclic processes is subdominant in them), neuroses, enforced anxiety [74; 73; 29; 44], mirror writing, dysgraphias and object representational disorder with unilateral spatial neglect [68], stresses difficult endurance and peculiarities [14], birth stress influence on left-handed babies [71; 70], enuresis, brain-epi-activity, supra-renal glands acute insufficiency (Waterhaus-Friderixen's syndrome), ovaries polycystosis (syndrome of Stein-Levental), dyschronoses (in part, at time and living zone change), sleeping and dreams disorders, oligophreny, boarder states, aphasias [48; 20], apraxias (in part due to less hemispheric specialization) [72], dyslexias [6], syndrome of attention deficiency with hyperactivity in children, autism [61]. The patients suffering from migraine are mostly left-handed [22] as well as from myopy [4]. Iranian and Italian scientists found higher prevalence of non-right handers among patients with restless legs syndrome that means an urge to move the legs [15], arterial hypertension [8], autoimmunity prevalence comparatively to right-handers [51]. So-called "syndrome of sinister" becomes be present more and more in scientific literature and includes physiological conditions which often are considered to be pathological ones that creates much problems to such people. In fact, these states can be classified as boarder ones and can be explained by human physiological and psycho-physiological peculiarities. On one hand, sinisters are classified to real, hidden and unreal. On other hand, there is a categorization of people to strong right- and left-handers, mixed right-/left-handers and ambidexters. Tehranian scientists showed bigger prevalence of addicts and smokers among left-handed young (28-34-year-old) men and women comparatively to the right-handed ones [50].

As it has been mentioned above, sinisters and dexters possess some distinguishing features in pathological and boarder conditions course. As a whole, common feature of pathological processes in all sinisters is in following: disorders both of sensory and abstract cognition, psycho-sensory and psychomotor processes are represented independently on injury side. These processes are disturbed separately in dexters. This clinical fact testifies that sinisters do not have brain hemispheres distinct specialization.

Besides own "left diseases" there are so-called applied aspects of sinisters study. We shall mention only some of them: children left-handers upbringing and teaching [24] in part the geniuses, professional orientation and selection, research groups creating, parapsychical phenomena forecasting, in criminalistics (at the suspected and the accused discovery), advantages and disadvantages in sports [43; 42; 65].

Left-handedness is correlated with social networks pathological use, so-called social network disorder [7].

Interest to handedness study in Iran can be demonstrated by the work the results of which shows that most left-handed undergraduate students started counting fingers with their left hands while the right-handed ones — with their right hands [57]. Tehranian neurologists research showed valuable

difference absence in right hemispheric language dominance in left-handed 22-29-year-old men and women by trans-cranial Doppler ultrasonography [64]. Handedness in children affects on lateralization of emotional processing, and patterns of emotional processing lateralization are different in left- and right-handed individuals [60], comparing right-handed and left-handed cases in both sex groups did not show any significant difference in school readiness assessment in Qazvin in Iran [45]. There is a work about handedness and gender effect on auditory attention in young adults of 18 and 30 years [33] showing no gender effect on the results with described possibility to change brain laterality while transcranial magnetic stimulation using [25]. The boys and the left-handed have a weaker performance compared to the girls and the right-handed; the variants of gender and handedness, however, do not have mutual action on affecting cognitive flexibility [28]. EEG of left-handed children suffering from Dawn syndrome under resting state and while listening to a story were different between each other and comparatively to the healthy children the same state EEG waves according to the results of the scientists from Mashhad [34]. The transfer strength between left hand to right is bigger than in opposite direction while no valuable differences are in velocity in 10-11-year-old school Iranian children [1].

There is a consideration about right-handedness benefits especially in spatial abilities, in the biggest extent in children [66]. It is important to know about atypical brain asymmetries in asexuals [10].

There was a significant association between lateral dominance and birth season, between lateral dominance and gender, between ambidexterity and birth season, between non-genetic sinistrality and birth season, between dextrality and gender, between ambidexterity and gender, between genetic sinistrality and gender in Tehranian boys [17]. There were no significant associations between dextrality and birth season, genetic sinistrality and birth season, between non-genetic sinistrality and gender.

It is worthy to mention that children represent separate investigative group concerning interhemispheric asymmetry individual profile [62] as well as adolescents [30].

Thus, handedness contributes much in health and disease and its study must be in a process in Science different branches as well as in the Earth various corners.

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## **ВПЛИВ ПРОБІОТИКІВ, ВІТАМІННИХ ПРЕПАРАТІВ ТА ЕНТЕРОСОРБЕНТІВ НА ПОКАЗНИКИ ЛЕЙКОГРАМИ КРОВІ**

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Останнім часом приділяється багато уваги імуномодулюючим засобам, здатним оптимізувати діяльність імунної системи. Актуальним є дослідження щодо цього сучасних препаратів, які не вимагають рецепту на придбання і є у вільному доступі. Нами проаналізовано вплив на показники лейкоцитарної формули пробіотики «Флора Lat probio», препарату «Дріжджі пивні натуральні», ентеросорбенту «Біле вугілля». Курс імуномодуляції (10 днів) проведено для 45 студентів-волонтерів ННІ природничих наук жіночої статі (обстежених у фолікулярну стадію менструального циклу) віком 18-21 років, котрі навчалися на 2-4 курсах. У дослідженні кожного препарату брали участь по 15 осіб. Визначали показники лейкограми. Забори крові проводили кваліфіковані медичні працівники.

До профілактичного курсу аналізовані показники лейкоцитарної формули обстежених знаходилися в межах норми, рекомендованої в джерелах літератури. Проте, показники рівня лімфоцитів перебували на нижній межі гомеостатичної норми, а відсоток нейтрофілів — на вищій. Пробіотичний препарат «Флора Lat probio» містить суміш бактерій *Lactobacillus bulgaricus* та *Streptococcus thermophilus*. Дія пробіотики обумовлена в основному функціями бактерії *Lactobacillus bulgaricus*, характерної для продукції рослинного та молочного походження [2]. Застосування «Флора Lat probio» дозволило оптимізувати співвідношення показників лейкограми, привівши до помірного підвищення відносної та абсолютної кількості лімфоцитів на фоні зниження вмісту нейтрофілів у периферичній крові.

Вітаміни групи В — водорозчинні вітаміни, що беруть активну участь у клітинному обміні, зокрема, клітин імунної системи [3]. Одна таблетка засобу «Дріжджі пивні натуральні» містить 500 мг очищених сухих пивних дріжджів. З вітамінів групи В до складу входять тіаміну монопіридат, рибофлавін, піридоксину гідрохлорид, фолієва кислота, біотин та вітамін В<sub>12</sub>, Са-D-пантотенат. Після проходження курсу виявили тенденцію, подібну до спричиненої пробіотиком «Флора Lat probio», проте, зниження рівня нейтрофілів відбувалося переважно за рахунок молодих паличкоядерних нейтрофілів.

«Біле вугілля» є сучасним супердисперсним ентеросорбентом на ос-