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Research Article

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[Peculiarities of photon emission of whole non-diluted human blood obtained from healthy donors and patients with some diseases](#)

Blood plays an important role in oxygen absorption and its transfer to organs and tissues in vertebrates, as well as in a number of invertebrate species. Numerous interactions between cellular and non-cellular blood components constantly occur. A special role in these interactions belongs to erythrocytes and leukocytes, between which oxygen is constantly exchanged and activated, which we showed directly in whole blood. Blood is a liquid tissue, which is a complex cooperative system and has many inherent functions and the most important one is the ability to maintain the homeostasis of the body. Our experience has shown that despite its high optical density, undiluted blood of humans and animals can be a source of radiation due to the transformation of the energy of electron-excited (EEE) states and secondary processes occurring in the whole blood system. Parameters of this radiation - ultra-weak photons emission (UWPE) from blood - depend upon its physiological properties and reflect the physiological state of a donor. Analysis of UWPE from non-diluted blood is a simple and sensitive method that allows to monitor the course of treatment of a patient. In spite of high opacity of non-diluted blood it may be a strong source of UWPE both in the presence and absence of UWPE enhancers. Analysis of patterns of UWPE from blood reveals its highly non-linear, stable non-equilibrium and cooperative properties. Characteristic of a living system.

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Opinion

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[COPD and low plasma vitamin D levels: Correlation or causality?](#)

Chronic obstructive pulmonary disease (COPD) is the third leading cause of death and its prevalence and incidence is also related to smoking behavior [1]. COPD is still a chronic inflammatory and progressive disease caused by multifactorial agents including environmental pollutants [2]. Besides that, it is emerging that endogenous epigenetic factors induced by lifestyle and environment [3] could play a role in the etiopathogenesis of the disease [4].

In the last years, several authors suggested that low vitamin D levels seem to be related with the increase of COPD manifestations [5]. Moreover, a multicentre, double-blind, randomised controlled trial documented that vitamin D supplementation protects against moderate or severe exacerbation of the disease, but not by upper respiratory infections [6]. However, low levels of vitamin D can be extended to many other diseases, including multiple sclerosis, diabetes, colon rectal cancer, headache or drug use [7-11]. Moreover, it is also important to remember that Vitamin D deficiency is common in high latitude regions, such as northern Europe, New Zealand, northern USA, and Canada where weaker ultraviolet B rays is not able to produce enough vitamin D. Finally, methodological factors (using low sensitivity methods) could contribute to misleading evaluation of circulating vitamin D levels. In any case, here we shall remind that vitamin D has a fundamental role in immunity [12]. In particular, it has been reported that vitamin D is able to shift the pro-inflammatory T-helper cell 1 to anti-inflammatory T-helper cell 2 [13]. Therefore, benefits of vitamin D supplementation in chronic diseases which directly or indirectly affect immune system are obvious. Today, the burden of COPD in never smokers is higher than previously believed. Therefore, more research is needed to unravel the characteristics of non-smokers COPD [1]. Notably, vitamin D levels are reported to be significantly lower in smoker's subjects than in non-smokers ones [14]. Therefore, low plasma vitamin D levels in COPD seems to be more a causality than a correlation.

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Research Article

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[Effect of diabetes mellitus on the Pulmonary Function Tests in Sudanese Diabetic Patients](#)

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Background: Diabetes mellitus is a leading cause of illness and death. Pulmonary function test PFT has assumed a key role in epidemiological studies investigating the incidence, natural history and causality of lung disease.

Methods: A cross sectional study was conducted in The National Ribat Teaching Hospital and Jabir Abualiz Specialized Diabetes Center in Khartoum state to measure the respiratory muscle power in 31 diabetic patients (case group) and 30 non-diabetics patients (control groups). Pulmonary function tests were measured by using Digital Spirometer-Micro-Plus version.

Results: Lung function parameters between diabetic patients and their matched control group show no significant differences between the means of FVC, FEV1 and FEV1/FVC. However, diabetic patients showed significant reduction in PEFr.

Conclusions: Exercise and well control of diabetes helped in preserving normal respiratory muscle power. Continuous reasonable exercise with good control is highly recommended for all diabetics.

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## Research Article

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[Successful treatment of late-onset pulmonary hypertension after atrial septal defect operation with macitentan: Our center experience](#)

Background: Macitentan significantly improves pulmonary hemodynamics and survival in patients with primary pulmonary hypertension (PPH). Its beneficial effect, however, may be blunted due to the adverse impacts such as anemia and peripheral edema. Pulmonary arterial hypertension (PAH) is a significant consequence of congenital heart disease (CHD). Its presence and severity are associated with increased morbidity and mortality. We tried to evaluate that the effectiveness of the macitentan in patients with late-onset pulmonary hypertension after atrial septal defect operation in our center.

Methods: The effect of a single dose of macitentan (10 mg) on pulmonary hemodynamics, functional capacity was examined in four patients with late-onset pulmonary hypertension after atrial septal defect operation.

Results: The macitentan significantly improved mean pulmonary artery pressure (MPAP), cardiac output (CO), tricuspid annular plane systolic excursion (TAPSE), right ventricle systolic wave(RVS'), 6-minute walking test and NT-proBNP levels compared with before treatment.

Conclusions: Macitentan can be used in patients with late-onset pulmonary hypertension after shunt operation especially atrial septal defect.

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