

PROJET DE CONFÉRENCE INVITÉE ou GUEST LECTURE

Rappel : A la faveur de la venue d'un chercheur international réputé, l'objectif de ces conférences invitées est de favoriser, dans le cadre de l'Institut d'Études Avancées, une ouverture disciplinaire et des échanges entre collègues de laboratoires différents mais qui partagent des intérêts scientifiques congruents.

Titre de la conférence : Geological factors and type 2 diabetes prevalence in the Republic of Bashkortostan

Date proposée : semaine du 2 au 6 Avril, date indifférente.

Résumé :

Diabetes is a serious medical problem nowadays with more than 400 million people affected, and in Russia, more than 4 million. Epidemiological studies of diabetes type 2 have revealed that its prevalence varies considerably, that could not be explained only by nutrition peculiarities, genetics and obesity. The research was held in the Republic of Bashkortostan, a region in the central part of Russia. The western part of RB is situated in the East European Platform and the eastern part is in the Ural Mountains. The wide range of geological structures and rocks creates a variety of natural microelement status types, allowing us to use this region as a research ground for studying the biological role of geological factors. The mapping of the diabetes prevalence enabled to mark out 3 clusters – in the zone of the Urals (Uralian cluster, lowest prevalence), in the north (northern cluster) and in the west (western cluster). There is a high concentration of tectonic faults in the Urals and the data suggest the possibility of a favourable effect of geodynamic active zones on the state of health of the population, perhaps due to the higher availability of elements in this zone. The observed decrease and relative uniformity of the diabetes prevalence in the northern cluster may be also related to the widespread occurrence of marine carbonate rocks there. The diabetes prevalence in the western cluster varies greatly from relatively low – 1268 per 100 000, to high – 2845 per 100 000 and this is consistent with the continental origin of the rocks that causes a mosaic distribution of chemical elements according to the relief and paleorelief. Comparative analysis of 45 chemical elements in 1042 samples by ICP-MS method in soil of 3 clusters showed higher content of iron and beryllium in the territory of the northern and Uralian clusters in comparison with the western one. The revealed association between the higher levels of iron and beryllium in the environment and the decrease in the prevalence of diabetes testifies to the possible beneficial role of these elements in the regulation of carbohydrate metabolism. Thus, the patterns of prevalence of diabetes mellitus in Bashkortostan are consistent with the regional geological conditions, which indicates the future prospects for research in this direction.