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Air quality in the mountain climate-balneological resort Kislovodsk

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There has been studied the quality of the surface atmosphere in the mountain climate-balneological resort Kislovodsk (MCBRK) to treat by means of climate and landscape (TCL) of the patients suffering from bronchial asthma (PBA) [1]. 60 children (31 boys and 29 girls at the age of 9-11 years) were examined in the course of 34 days of the resort treatment in MCBRK, PBA (ICD-10 G45,0) in a remission stage. There have been used the data of the long-term bioclimatic monitoring (BCM) that is carried out by PRIC FMBA, aerosol monitoring of IFA RAS, landscape monitoring of SNP in Kislovodsk Resort Park (KRP) as well as the data of medical monitoring, daily testing of meteopathic reactions (MPR), indicators dynamics of bronchial patency, cardiac rhythm, neurovascular reactivity, psychoemotional status of patients. TCL was carried out in the form of walks under the canopy of Betula pendula Roth., Salix f. pendula, acer platanoides globosum, Aesculus hippocastanum L., Phellodendron amurense, Tilia caucasica in KRP daily lasting from 1 till 2 hours.
The results of a complex research showed that at TCL in KRP the favourable heat balance had 92% warm relations (B<600/m2 – comfort and weak over comfort); the increased natural aero ionization ($\sum$(N+)+(N-)=1350-1850 ion/cm3 at KUI<0,88); bacteriostatics natural trees 13-58%; the level of the weighed aerosol particles (the size of 500-20000 nanometers) from 1,2 to 3,6 particles/cm3 – (from pure to poorly polluted atmosphere); only 86% of the patients had cases with the increased and high transparency of the atmosphere (0,756-0,849).
Under the influence of the course TCL 53(88%) patients had improved indicators of bronchial patency, 58(97%) had signs of increasing qualities of regulatory processes in the organism (vegetative regulation for 14%; neurohumoral regulation for 12%; psychoemotional regulation for 16%; the ability of the organism to adaptation for 17%); 38(63%) patients had vegetative index of Kerde that reached normal values, 20(34%) had significantly decreased level 2(3%). It remained without any changes. According to testing the deterioration of “if”and emergence of MPR (4,3 mpr/day) was followed incidentally at a distant forest fire (4 days) that was followed by a heat wave (max>300), aerosol growth till 6-12 particles/cm3 in the blocking anti-cyclone.
Conclusion: the surface atmosphere in KRP is mainly at the level of background rural territories, it is perspective for usage in the medical and improving purposes. Episodes of slightly polluted surface atmosphere are connected with forest fires, autopollution during the periods of the blocking anti-cyclones.

References

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