

Research experience of health-related potential of mountain oak forests

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There have been conducted some comprehensive studies of the therapeutic potential (TP) of the oak forest (*Quercus robur* L.) for purposes of climate-landscape therapy (CLT) in mountain resorts of Caucasian Mineral Waters region.

The experiment was conducted in the summer of 2015 in the context of climate change (increasing frequency of episodes of hot weather in summer) on the group of volunteers (20 people) in two age groups 35-43 (I) and 44-49 (II) old years in a natural stand of *Quercus robur* L. in the South-Eastern slope of mount Beshtau (Kvartal 2, division 18).

Geographic coordinates of the site: N 44° 08' 58" ; E 43° 06' 59,2".

TP was provided with the help of combined effects on human health of specific natural factors of mountain bioclimate, biological functions of oak and mountain panoramas [1]. Under the oak canopy the following things were observed: high air ionization ($\sum(N+)+(N-)=1200-2200$ ion/cm³ at KUI lower than 1.0); moderate bacteriostatic (50-60%), conditions of weak supcomfort (<586 W/m²) which was 205 W/m² lower than open areas (high supcomfort), external hypoxia was 6-8%.

Before and after CLT in the mountain oak forest the recipients were evaluated heart rate variability (HRV) and emotional status (anxiety level, health, mood) [2, 3]. Before walks the 1st group had indicators determining HRV 1,5-2 times higher than the 2nd group while a high correlation degree between the index of vegetative balance and the level of anxiety ($r=0.9$, $p<0.05$).

There have been identified two strategies of adaptive reactions at CLT: the 1st group had an increased in power by 10% in the whole spectral range (0,003-0,4 Hz) associated with the improvement of health and activity ($r=0.9$, $p<0.01$). The 2nd group had a decrease in the overall power of vegetative regulation of cardiac function and a change of the activity in range (VLF (0,003-0,04 Hz) from 70% to 55 % and LF (0,04-0,15 Hz), heart rate variability increased, regulatory capacity expended, mood improved. The research is still being carried out.

Conclusions: Walking under the canopy of mountain oak forests have a positive impact on heart rate, health and mood, reduce anxiety, and can be used in a complex landscape therapy in mountain resorts.

REFERENCES

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