

Frequency Analysis of Meridian System

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It was indicated that the DC and AC exist in dermal connective tissue by the experiment in which electrical potential in dermal connective tissue was measured with a special insulated needle inserted in two acupuncture points to the depth of dermis. In this study, electrical potentials in twelve major meridians were measured and analyzed to evaluate the frequency of AC in dermal connective tissue where meridian is thought to exist. Special silver needles were prepared such that they were fully coated by insulating paint except the 0.3mm length at the tip, where silver needles were exposed to allow electrical conduction and were chloridated so that the influence of polarization decreases. Though the analysis of the electrical potential difference between two meridian points could not find apparent peak of the frequency, the analysis of the difference of the electrical potential difference between two meridian points indicated the existence of the peak of the frequency. This is thought to happen because the electrical potential in dermal connective tissue is not stationary. Under the condition that the filtered frequency ranged from 0 Hz to 0.238Hz, maximum amplitude frequencies (=the peaks of the frequencies) ranged from 0.02Hz to 0.442Hz and some of them were higher than 0.238Hz. The average of maximum amplitude frequencies of male Yang meridians was 0.182Hz and standard deviation of them was 0.045Hz. The average of maximum amplitude frequencies of male Yin meridians was 0.173Hz and standard deviation of them was 0.046Hz. The average of maximum amplitude frequencies of female Yang meridians was 0.228Hz and standard deviation of them was 0.031 Hz. The average of maximum amplitude frequencies of female Yin meridians was 0.175Hz and standard deviation of them was 0.068Hz. Not only under the condition that filtered frequency ranged between 0 to 0.238Hz, but also under the condition that filtered frequency ranged between 0 to 0.5Hz and between 0 to 1.0Hz, electrical potential differences between acupuncture points of meridians were analyzed so that they were evaluated under the wider frequency range, Kai-square test showed that the averages of maximum amplitude frequencies of both of male and female 12 meridians fitted normal distribution in any frequency range (0-0,238Hz, 0-0.5Hz, 0- 1.0Hz), which means that there is no significant difference among maximum amplitude frequencies of either male or female 12 meridians. Paired t-test showed that the averages of maximum amplitude frequencies of female Yang meridians were significantly higher than those of male Yang meridians in the frequency range of 0 to 0.238Hz (P value 0, 037) and that the averages of maximum amplitude frequencies of female 12 meridians were significantly higher than those of male 12 meridians in the other frequency range (0-0.5Hz, 0-1.0Hz) (P value 0.021, 0,024), Student's t-test showed that the averages of maximum amplitude frequencies of female Yang meridians were significantly higher than that of female Yin meridians in the frequency range of 0 to 0,238Hz (P value 0,027) and in the frequency range of 0 to 0.5Hz (P value 0,012) and that there was no significant difference between the averages of maximum amplitude frequencies of female Yang meridians and those of female Yin meridians in the frequency range of 0 to 1,01 Hz (P value 0.63). This indicates that meridian frequency may be less than 0.5Hz.

Kai-square test showed that the averages of maximum power amplitudes of both of male and female 12 meridians did not fit normal distribution in any frequency range (0-0,238Hz, 0-0,5Hz, 0-1.0Hz), which means that there is significant difference among the averages of maximum power amplitudes of both of male and female 12 meridians,.