Measurement of heart frequency with practical ECG device in horses

Letter to Editor

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Dear Editor,

Electrocardiography (ECG) is the recording of the electrical activity shaped as a result of myocardial depolarization and repolarization through electrodes placed in different parts of the body (Turgut, 2017). The real-time first negative wave, first positive wave and first negative wave after positive wave (QRS wave) is detected. Therefore, adaptive QRS size, high frequency noise and the combined adaptive threshold method, which evaluates all of the adaptive slew-rate (revolution) methods should be used through the recording simultaneously (Christov, 2004). The aim of this study is to determine the efficiency of the practical ECG device, which was developed by us and under patent protection, in detecting heart rate in horses.

This study was carried out on six Thoroughbred British Horses aged between 2-5 which continued race life. Datas were taken from the resting horses. Datas measured with the dual-channel three-electrode portable ECG device which developed by ourselves for practical measurements with the weight of 180 g (Table 1, Figure 1). The ECG device can record potentials between -10 mV and +10 mV with 1000 Hz sampling frequency and 15 bit analog-to-digital converter (ADC) quality. Cardiac potentials were recorded from the skin surface with Ag/AgCl electrodes. A Java-based smartphone application developed by us was used to record, display and store ECG signals. This software runs under the Android operating system and is compatible with the ECG hardware that we have developed. As a result, it was seen that practical ECG device measurements and smart phone software were successful in recording data and the device could be used safely in race horses (Figure 2).

Table 1. Heart Beat per minute in Horses

Horse No	Heart Beat/min
1	42
2	60
3	71
4	39
5	40
6	54

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Figure 1. Practical ECG Device

Figure 2. Placement of the ECG device in the equine body

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Ethical approval: Ethics committee approval was not enrolled in the present study, but it has been denoted that there is no need for approval of the ethics committee in non-experimental clinical veterinary practices index of Article 2 (b) of the Regulation on Working Procedures and Principles of Animal Experiments published in the Official Newspaper dated 15.02.2014 with no 28914 as was expressed. In the present study sera samples were withdrawn from sick animals, in an attempt to control their health status since it was understood that there was informed consent form in the study, ethics committee approval was not required for this study.

Conflict of interest: The authors have no conflicts of interest to declare.

KAYNAKLAR

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