hypoglycemic event. In WO 2007/144307 an algorithm for detecting hypoglycemia from an EEG signal is also presented. In US 6,572,542 B1both the EEG signal and the Electrocardiography (ECG) signal are applied for detection of hypoglycemia.

Such systems have been developed to a level where they can be carried continuously by a person without limiting the person in daily activities. If the onset of hypoglycemia is detected, e.g. according to a method described in WO2007/144307, the person is alerted by the system and has been instructed to either measure the blood sugar concentration or to drink or eat something increasing the blood sugar concentration. Often a surgical operation is needed in order to arrange electrodes subcutaneously on the head. These electrodes will, in some way, be connected with an electronic device arranged on the body.

For many hearing impaired persons using a hearing aid it may be difficult to handle this small high tech product. This may especially be a problem to elderly persons. If these persons are also equipped with an EEG monitoring system, which also needs correct handling in order to function properly, the risk of incorrect handling of at least one of these two devices will most likely increase significantly. This imposes a risk of missing an alarm of an upcoming biological incidence, such as hypoglycemia, or of not having the possible optimal hearing.

Therefore, it will often be a problem to equip elderly persons with both a hearing aid and an EEG monitoring system, both being equipment to which they must pay attention and handle in specific different ways in order to obtain the benefits of these devices. Also, more devices arranged on the body of a person increase the risk of overlooking one. Further, a hearing aid user often needs two hearing aids.

The above problem has been solved, in a first aspect, by a portable monitoring device comprising a hearing aid having a housing, at least one microphone for receiving ambient sound, acoustic signal processing means for processing a signal from the microphone, and an acoustic output transducer, said portable monitoring device further comprising an EEG monitoring system for monitoring EEG signals of a person using the ~~portable~~

~~monitoring device~~hearing aid, said EEG monitoring system being arranged at least partly in said housing, said EEG monitoring system comprising a measuring unit having electrodes for measuring one or more EEG signals from the person carrying the EEG monitor, said electrodes being arranged external to the housing or at the outer surface of the housing. Said EEG monitoring system further comprises a processing unit having EEG signal processing means for analyzing the EEG signal, said processing unit being arranged in said housing, said signal processing means being adapted for, based on the EEG signal, identifying or predicting specific biological incidences, such as a seizure, in said person, said processing unit comprising decision means for deciding, based on said analyzed EEG signal, when an alarm or information must be provided to said person, and means for providing said alarm or information through said output transducer.

A portable monitoring device comprising a hearing aid and an EEG monitoring system according to the invention will have the advantage of being only one device to remember and to handle. It can be manufactured to a smaller size and a lower price, compared to two independent devices since the housing and acoustic output transducer is applied for both purposes. Also other components, such as battery and part of the electronics, may be applied for both purposes. It will be possible for the manufacturer to design the portable monitoring device comprising a hearing aid and an EEG monitoring system such that the user interface of the two can be either integrated or setup for optimal handling and control of both the hearing aid and the EEG monitoring system, thereby facilitating an overall easier handling compared to two different devices. For example the same remote control would preferably be applied for both functions.

In an embodiment the portable monitoring device comprises adjustment means for adjusting the sound level of a sound message or an alarm according to the actual acoustic background noise level in order to make the sound message clearly discernible over the background noise. This will increase the probability that the user will notice an alarm or message from the EEG monitoring system, and take action on such an alarm, thereby reducing the risk of a biological incidence. This biological incidence may be

alarm or information could be passed directly to family members or to medical care staff. A radio receiver may also be applied for setting up the different parameters in either the hearing aid or in the EEG monitor.

In a second aspect the invention covers a method of monitoring an EEG signal of a hearing impaired person comprising the steps of

- providing a portable monitoring device comprising a hearing aid having a housing, at least one microphone for receiving ambient sound, acoustic signal processing means for processing a signal from the microphone, and an acoustic output transducer, said portable monitoring device further comprising an EEG monitoring system for monitoring EEG signals of a person using the portable monitoring device, said EEG monitoring system being arranged at least partly in said housing,
- providing a measuring unit having electrodes for measuring one or more EEG signals from the person carrying the EEG monitor, said electrodes being arranged external to the housing or at the outer surface of the housing, and
- providing a processing unit having EEG signal processing means for analyzing the EEG signal, said processing unit being arranged in said housing, said signal processing means being adapted for, based on the EEG signal, identifying or predicting specific biological incidences, such as a seizure, in said person, said processing unit comprising decision means for deciding, based on said analyzed EEG signal, when an alarm or information must be provided to said person, said alarm or information is provided through said output transducer.

In a third aspect the invention covers a system comprising a portable monitoring device according to the first aspect or any one of the above mentioned embodiments, and adapted to be arranged at one ear of a person. The system is further comprising a hearing aid adapted to be arranged at the other ear of the person. The hearing aid could also be substituted with a second portable monitoring device. Preferably, the first portable monitoring device and the hearing aid or second portable monitoring device can communicate wirelessly in