Table 2. Insulin content of Wistar rat islets (ng per islet) after 7 days of cultivation

Glucose during cultivation (mM)	Insulin content (ng per islet) 19–20 days pregnant rats	48 h post partum
1.8	14.5 ± 1.2	14.2 ± 2.5
5.6	26.9 ± 2.3	22.4 ± 2.3
21.7	43.4 ± 3.3	41.4 ± 2.8

Mean values ± SEM of 15 pregnant rats and 10 rats 48 h post partum.

as in islets from rats 48 h post partum (table 2). In vivo secretory pattern of islets from pregnant rats is normalized 48 h post partum (figure), but in vitro we observed a long-term effect, although the islets are removed from their physiological milieu and the islets cannot turn back as they do in vivo quickly.

The secretory response of islets from pregnant rats to 5.6 mM glucose is comparable with that of sand rat islets, which are also characterized by a lowered threshold concentration for glucose-induced insulin release found in freshly isolated as well as cultured islets, although the insulin content and release of sand rats are quickly exhausted by a glucose challenge in vitro[14].

But the ability of 5.6 mM glucose to stimulate the insulin release is maintained in islets of both species evoked by a short state (pregnancy) or a probably permanent state (species specificity) in sand rats.

We postulate that in vitro the insulin release during the long-term glucose challenge at high glucose concentration also depends on the capacity of the insulin net production (which can explain the continuous drop in content and secretion at 21.7 mM) but the recognition of the stimulus is adjusted in vivo and persists in vitro. The biochemical background of the hyperactivity of islets of pregnant rats is uncertain at present. It could be in connection with an enhancement of adenylate cyclase as well as of cellular cAMP content[15], or an alteration of a hypothetical receptor for glucose[16].

Further investigations are in progress to characterize islets adapted to different metabolic stages in vivo with regard to their behaviour under defined culture conditions in vitro.

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PRO EXPERIMENTIS

A low cost device for increased analytical capacity in gas chromatography[1]

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Summary. A simple device for automatic shut-down of a gas chromatograph is described. The device increases the analytical capacity by one sample a day, which is of interest when the retention times are of the order of several hours.

In gas chromatographic analysis, one often encounters the problem of long retention times. This will seriously limit the number of analyses that can be performed during normal working hours. One way to overcome this problem is to use a gas chromatograph equipped with an automated injector and a sample magazine large enough to contain samples for a whole night's continuous run. The prerequisite is, however, that all samples can be analyzed with the same instrument settings (temperature, amplification, etc.). If, however, the different samples require different settings, it will not be possible to use an automated gas chromatograph, unless it is controlled by a program unit with the capacity to store the different parameter values for each sample.

A time-saving compromise between manual and automated control would be a device that shuts down the instrument(s) after the last analysis of the day, without any technician having to be present. We have constructed a simple device with this function. It consists of a spring-type timer (Elektriska Instrument AB, Stockholm, type KS-50R), which will switch on or off the current fed to it at a given, preset time (0–6 h). In our case it has been wired into the circuits of the gas chromatogram recorder control so as to switch off the chart drive motor and the servo system of the recorder pen, leaving the amplifier live in the 'stand-by' state. The timer switch can be bypassed by means of the 'Hold-Timer' switch shown in the circuit diagram. With this switch in the 'Hold' position, the recording will go on until switched off manually. Just before leaving for the day, the technician sets the instrument controls properly and injects the sample. With the timer switch in the 'Timer' position, the required time for the analysis is preset and the gas chromatograph left on its own. After the required time, the chart drive and the pen servo system are switched off and the recording terminated.

With the simple, low-cost device described, it is possible to perform one analysis more a day without having to let the chart paper run all night or, even more expensive, having a technician present to switch off the recorder at the end of the run. The basic device described can easily be modified for use with any other apparatus, e.g. incubation baths, ovens, etc., by the use of adequate relay circuits controlled by the timer.

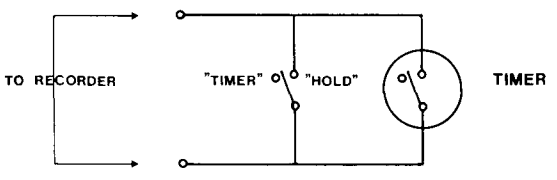

Diagram of the timer circuit described in the text.

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