

Vogel Test System

Anxiety Monitoring System

– Specifications subject to change without notice –

TSE Vogel Test System

General information

The **TSE Vogel Test System** is designed for monitoring the effect of anxiolytic agents in small laboratory animals using the technique described by **Vogel et al.** (Psychopharmacology 1971, 21:1-7).

The Vogel conflict test appears to be of particular relevance to generalized anxiety disorders.

System components

The system can be configured for rats, mice or other small laboratory animals. It includes:

- animal cage(s),
- control unit with integrated shock module(s),
- cable set for connecting up the system,
- control interface,
- Vogel Test software for Windows and
- PC with Excel software (optional).



Measuring principle

The water-deprived animal is located in a test cage with an electrically conductive nipple and grid.

Animal licks are recorded by the electrical sensor currents at the drinking nipple; these currents are below the animal's perception level.



Drinking bottle

The animal is allowed to drink and to complete a user-specified number of licks before a shock is administered. The shock duration and intensity can be set by the user. The animal controls shock frequency by withdrawing from the tube.

In the software main menu there are two displays for each cage; these light up when a lick or shock takes place.

Data recording can be started after the first lick, after the first shock or by a manual start.

The data is transferred to an Excel worksheet. In addition to date, time and test duration the number of licks and shocks per test interval and per animal cage are stored. The universal data format allows further evaluations to be carried out.

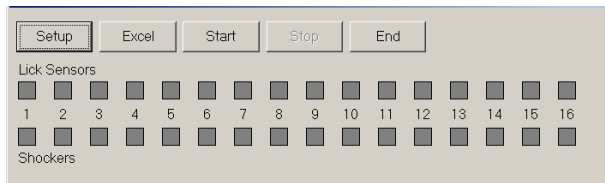
The number of shocks received after treatment with anxiolytic drugs is subsequently compared to that of untreated animals.



Standard cage mouse

Vogel Test Software

When the program has been started the program main window appears:



At the top of the window the following buttons are available:

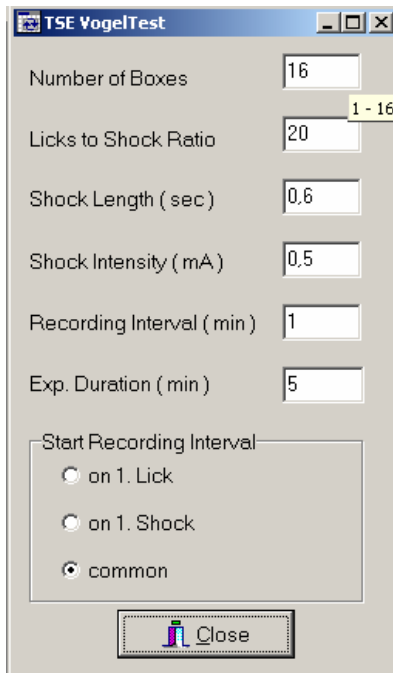
| | |
|--------------|---|
| Setup | Opens the setup window for entering control parameters |
| Excel | Creates a link to Excel, if this has not already been started |
| Start | Starts a measurement |
| Stop | Stops a measurement |
| End | Ends the program |

Below the buttons the following symbols are available:

| | |
|---------------------|--------------------------------|
| Lick sensors | Lick sensor activation display |
| Shockers | Shock application display |

Preparing an experiment (“Setup”)

Before a measurement is started control parameters have to be specified. This is done in the “Setup” window:



The following parameters are available:

- **Number of Boxes (1 - 16)**
Here the number of boxes has to be entered.

- **Licks to Shock Ratio (1 - 100)**
Number of licks that must have occurred before a shock is applied.
- **Shock Length (0.1 - 5.0 sec)**
Shock application duration in seconds.
- **Shock Intensity (0.1 - 3.2 mA; 0=Off)**
Strength of shock application in mA.
- **Recording Interval (1- 60 min)**
Length of the individual measuring interval, i.e. the period after which test data is entered in the Excel worksheet.
- **Start Recording Interval**
 - “on 1st Lick” – the measurement begins after the first lick. The first lick is not entered in the measured values table, but only triggers the start of the measurement. If no lick is applied by the animal the corresponding columns in the Excel table remain empty.
 - “on 1st Shock” – the measurement begins after the first shock. The first shock is not entered in the measured values table, but only triggers the start of the measurement. If no shock is applied the corresponding columns in the Excel table remain empty.
 - “common” – the measurement for all cages begins when the start button is activated. If no lick is made by the animal and no shock is applied then a “zero” is entered for the corresponding cages in the columns of the Excel table.

Configuring an Excel sheet

In order to guarantee maximum flexibility the measuring values are transferred into an **Excel** sheet.

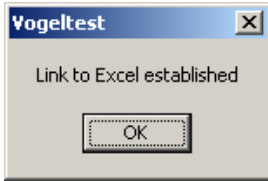
Test date and time, the number of licks and shocks per recording interval/animal cage and information about the length of the test and the start mode (on 1st lick, on 1st shock or common) are also given.

The user can provide the measurement table with additional information – individual Excel worksheets can be created containing all required descriptive information such as type of animal, operator etc.

These predefined worksheets can be used as templates for the subsequent measurements.

Starting a measurement

Before a measurement is started the link to Excel has to be established. Clicking on the button “**Excel**” automatically opens the program.



- Load an existing template worksheet or create a new one.
- Fill in the given input fields and save the file under a different name.
- Select the starting position.

| | A | B | C | D | E | F | G |
|----|-------------|---------|-----------|------------|----------|----------|--------|
| 1 | Experiment: | 1 | | Trial: | 12 | | |
| 2 | User: | DGW | | Code: | AB1-2C | | |
| 3 | Species: | Mouse | | Strain: | ICR | | |
| 4 | Substance: | Saline | | Dose: | no | | |
| 5 | Comment: | Control | | | | | |
| 6 | | | | | | | |
| 7 | | TSE | VogelTest | 03.05.2004 | 14:30:30 | Duration | 15 min |
| 8 | | Box-1 | Box-2 | | | Box-3 | Box-4 |
| 9 | Time | Licks | Shocks | Licks | Shocks | Licks | Shocks |
| 10 | 00:03:00 | 290 | 14 | 287 | 14 | 289 | 14 |
| 11 | 00:06:00 | 297 | 15 | 286 | 14 | 284 | 14 |
| 12 | 00:09:00 | 289 | 14 | 290 | 15 | 285 | 14 |
| 13 | 00:12:00 | 296 | 15 | 313 | 15 | 300 | 15 |
| 14 | 00:15:00 | 274 | 14 | 289 | 15 | 286 | 15 |
| 15 | | | | | | | |

Recording Data in Excel

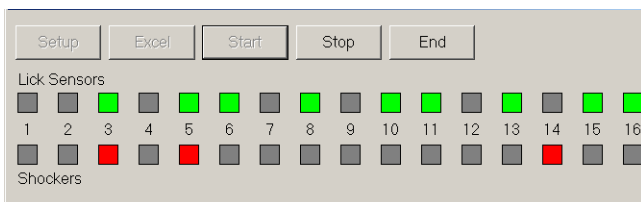
| | A | B | C | D | E | F |
|---|-------------|---------|---|---------|--------|---|
| 1 | Experiment: | 1 | | Trial: | 12 | |
| 2 | User: | DGW | | Code: | AB1-2C | |
| 3 | Species: | Rat | | Strain: | Wistar | |
| 4 | Substance: | Saline | | Dose: | no | |
| 5 | Comment: | Control | | | | |
| 6 | | | | | | |
| 7 | | | | | | |

Start position for automatic data input

The measurement is then activated with the “Start” button.

In the “common” mode the measurement starts immediately, in the “on 1st lick” or “on 1st shock” mode measurement starts with the first lick and first shock respectively.

Each time a lick or shock occurs the Vogel Test software main window shows a **green** or **red** square thus allowing the operator to see the status of each box at a glance.



Trial Monitor

Both pieces of information are – according to the specified measuring interval – transferred to the Excel table and displayed in the selected format.

Ending measurement (“Stop” button)

The measurement mode can be deactivated by using the “Stop” button, if the measurement has not already been stopped by the defined test duration having elapsed. No further licks will be counted and shock application is deactivated.

The measurement data in the Excel worksheet are now available for further-reaching statistical evaluation.

Partial list of users

- DSO National Laboratories (Kent Ridge), Singapore, Singapore
- Medical University of Silesia, Zabrze, Poland
- NOVARTIS PHARMA AG, Basel, Switzerland
- SkeleTech Inc., Bothell, WA, USA
- University College Cork - UCC, Cork, Ireland

Ordering Information

| Cat.No. | Description |
|--------------|---|
| 259940 | <p>Anxiety Monitoring System "Vogel Test" with N animal cages Fully automatic. Complete and comprising:</p> <ul style="list-style-type: none"> • N cages for mice or for rats (animal species to be specified) <ul style="list-style-type: none"> - drinking bottle with stainless steel drinking nipple - conductive floor grid - lid - connecting set • shock generator(s) for conductive floor grid(s)/ drinking nipple(s) • control unit system complete with software package "Vogel Test" for WINDOWS <p>Requires: PC with MS Excel</p> |
| 259940-CA/M | <p>Mouse Cage for Anxiety Monitoring System "Vogel Test" complete with:</p> <ul style="list-style-type: none"> • drinking bottle with stainless steel drinking nipple • conductive floor grid • lid • connecting set |
| 259940-CA/R | <p>Rat Cage for Anxiety Monitoring System "Vogel Test" complete with:</p> <ul style="list-style-type: none"> • drinking bottle with stainless steel drinking nipple • conductive floor grid • lid • connecting set |
| 259940-SHOCK | <p>Shock Generator for Anxiety Monitoring System "Vogel Test", Microprocessor-equipped shock module. Designed to provide a mild constant current shock with output adjustable via software up to 3.2 mA (<i>up to 4.5 mA available on request</i>). Alternatively pulsating constant current with 20 Hz frequency can be applied (<i>other frequencies on request</i>). The current chosen is applied independent of the actual cross-over resistance (max. 73 kOhm at 1.5 mA). To be mounted into the Anxiety Monitoring "Vogel Test" Control Unit. Requires: 1 Shock generator for each cage.</p> |
| 303500-R/C-n | <p>Control Unit System for Anxiety Monitoring System "Vogel Test" For connection of N Mouse or Rat Cages for Anxiety Monitoring System "Vogel Test", expandable. User-defined control of experiment via the flexible VT software. Possible entries in the setup are:</p> <ul style="list-style-type: none"> • recording interval (1-60 min.) • number of licks per shock (1-100) • shock intensity (0.1 - 3.2 mA) • shock length (0.1 - 5.0 sec) • measuring mode (on 1. lick, on 1. shock and manual start) • experiment duration (1 - 60 min) <p>Supervision display for lick sensor and shock generator of each animal cage. Automatic data transfer in Excel:</p> <ul style="list-style-type: none"> • date of experiment |

| | |
|--|---|
| | <ul style="list-style-type: none"> • start time of experiment • number of particular animal cage • experiment duration • measuring mode • number of licks per interval and animal cage • number of shocks per interval and animal cage • mean value (if desired) • standard deviation (if desired) <p>Complete and consisting of (for connecting to PC):</p> <ul style="list-style-type: none"> • control unit (complete with power supply and connectors for N shocker modules) • special interface system VT-0N • software package VT-0N for WINDOWS <p>Requires: PC with MS Excel.</p> |
|--|---|

N = 1, 2, 4, 8, 12, 16, 24, 32, 48*, 64

(*if more than 32 cage connections to the control unit are required then you should select the 64-place control unit)

TSE Systems is a leading supplier of sophisticated research instrumentation in the global life science market. Our focus is on providing the total customer solution, with modular designs of integrated hardware and software platforms for neuroscience, metabolic and behavioral phenotyping, drug screening and toxicology.

For further information please contact us.

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