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Produkte**Erste OEM-Version von SigmaPlot**

SigmaPlot Graphing API ermöglicht Integration von SigmaPlot Graphik-Funktionen in andere Anwendungen

Systat Software, führender Hersteller wissenschaftlicher Softwareprogramme und –services, hat mit dem SigmaPlot Graphing API erstmalig eine eigenständige OEM-Version von SigmaPlot entwickelt, mit der Anwendungsentwickler SigmaPlots umfangreiche Graphik-Funktionen in ihre eigenen Programme oder Instrumente integrieren können. So können Anwendungen ohne weiteren Entwicklungsaufwand mit einem umfangreichen graphischen Funktionsangebot ausgestattet werden, das über 100 2D- und 3D-Graphtypen aufweist. Ebenso lassen sich Aufgaben wie routinemäßige Analysen durch den Einsatz individuell gestalteter Arbeitsabläufe automatisieren.

Seit über 20 Jahren auf dem Markt, wird SigmaPlot heute von weltweit mehr als 150.000 Wissenschaftlern, Forschern und Ingenieuren in zahlreichen Arbeitsbereichen eingesetzt. Das Programm ermöglicht es Anwendern, ihre Daten zu bearbeiten und in exakte Graphen mit Publikationsqualität umzusetzen. Mit seiner besonderen Flexibilität bei der Anpassung jedes Graph-Objekts nach wissenschaftlichen oder ingenieurtechnischen Anforderungen ist SigmaPlot heute der technische Graphik-Standard.

Das SigmaPlot Graphing API unterstützt alle 2D- und 3D-Graphtypen sowie numerische Daten und Textdaten. Das Gesamtpaket enthält neben der Programmierschnittstelle: Graphing API (C++ DLL) auch Anwender-Oberfläche: UI-DLL (MFC Extension DLL), Dokumentation, Beispielcode sowie einen Lizenzschlüssel für das Produkt. Das Graphing API nutzt ein C++ flat API, es kann jedoch auch eine optionale UI-Komponente eingesetzt werden, mit der Anwendungsentwickler Graphattribute modifizieren oder umprogrammieren können.

Artikel

SigmaPlot 11 - jetzt auch mit Statistik

Dr. Thomas W. Beneke & Dr. Wolfgang W. Schwippert, erschienen in: Physik Journal, Heft 11/2008 und zu finden unter „Software-Rezensionen“ auf www.pro-physik.de

In Sachen Datenanalyse ist die Software SigmaPlot recht verbreitet und beliebt. Das Programm hat sich bei der Datenanalyse bewährt und erzeugt genaue und publikationsfähige Grafiken für Präsentationen und Printmedien. Was soll sich an so einem Programm noch verbessern lassen, abgesehen von den üblichen Kompatibilitätsanpassungen wie z. B. komplette Unterstützung von Windows Vista oder unmittelbare Importmöglichkeiten von MS-Excel-Dateien? Auch der integrierte Austausch von EMF-Dateien (Enhanced Metafile Format), der die bestehenden Im- und Exportmöglichkeiten ergänzt, lässt sich wohl kaum als revolutionärer Eingriff bewerten. Das Grundkonzept des Programms ist erhalten geblieben, und dennoch weist Version 11 eine Reihe von Erweiterungen und Überarbeitungen auf, die z. B. die Anwenderfreundlichkeit weiter erhöhen und dem Einsteiger einen noch bequemeren und individuelleren Zugang zum Programm erlauben.

Nach wie vor werden Projekte, die aus SigmaPlot- oder auch Excel-Tabellen mit bis zu 32 000 Spalten und nahezu unbegrenzten Reihen sowie Grafiken und Texten bestehen können, in sog. Notebooks verwaltet. Um Grafiken zu gestalten und zu erzeugen, steht neben klar gegliederten und aufgabenbezogenen Dialogen ein spezieller Assistent bereit. Zusätzliche Assistenten unterstützen den Datenanalytiker auch bei Regressionen bzw. Approximationen, und Routineabläufe lassen sich mit der VBA-kompatiblen (Visual Basic) Makrosprache von SigmaPlot programmieren und damit automatisieren.

Ein neuer Schwerpunkt betrifft die individuelle Gestaltung der Arbeitsfläche, wo sich Werkzeugelementen mit ihren Funktionsbereichen jetzt nach eigenen Bedürfnissen zusammenstellen lassen. Den Programmeinsteiger werden die ebenfalls neu integrierten vorformatierten Datenblätter überzeugen, die Diagramme durch eine Programmseitige, automatische Dateninterpretation umgehend erzeugen. Daten werden dann schon mit der Eingabe grafisch umgesetzt. Zusätzlich kann ein Arbeitsblatt sog. Transformationen enthalten, die der Benutzer angelegt hat. Durch das automatische Update dieser „Quick Transforms“ werden die Transformationen unaufgefordert aktualisiert, sobald die Eingangsdaten sich verändern. Mithilfe der globalen Kurvenanpassung lassen sich nun auch Datensätze durch mathematische Operationen gemeinsam bearbeiten.

Die wichtigste Neuerung und eine von vielen Usern erwartete Erweiterung betrifft das statistische Angebot, das sich ab sofort in Sigma Plot nutzen lässt, sodass ein aufwändiges Hin- und Herhantieren etwa mit SigmaStat entfällt. Indem man sich an den in Forschung, Wissenschaft und Technik überwiegend eingesetzten statistischen Verfahren orientiert hat, sind in Version 11 jetzt mehr als 50 Tests einsetzbar, wobei der Anwender vom Programm geführt den Analyseablauf meistert. Stichworte mögen einen Eindruck über die statistischen Neuaufnahmen vermitteln: Cox Regression, Odds Ratio Statistic, Relative Risk Statistic, One

Sample t-test, Shapiro-Wilk Normality Test, Anova Profile Plots, Cox Regression Plots, 24 Probability Transforms, Gamma, Weibull, Cauchy, Error, LogNormal, Exponential, Logistic oder LogLogistic. Außerdem schlägt SigmaPlot anhand der Datenlage geeignete Tests vor. Dabei überprüft die Software auch die notwendigen Parameter und Annahmen, damit das Programm im Ergebnis einen Bericht erstellen kann, der alle Detailaspekte berücksichtigt und das Resultat so darstellt, dass der Anwender die Dateninterpretation problemlos verstehen kann.

Hinsichtlich der grafischen Leistungen sind zudem einige Verbesserungen bei den 2D-Vektordiagrammen und ihren Gestaltungselementen eingeflossen, und die Objekte von 3D-Grafiken lassen sich nun ebenfalls vielfältiger gestalten, indem jeder Baustein einer Grafik individuell modifiziert werden kann.

Artikel im PDF-Format downloaden unter: http://www.systat.de/PDFs/Rev_PhysikJournal.pdf

Artikel

SigmaPlot 11: Now with Total SigmaStat Integration

Imagine my joy as I discovered a complete package of publication-quality graphics software with analytic and presentation tools

John A. Wass, Ph.D., in: Scientific Computing International, Jan/Feb 2009

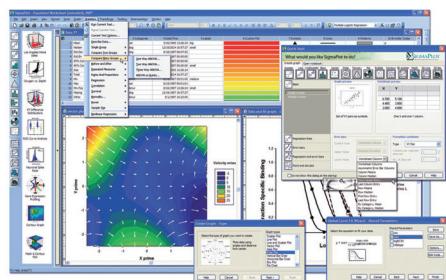


Figure 1: SigmaPlot graphics and wizards, including the Quick Start Menu (upper right) and the graph wizard (bottom center)

The SYSTAT people who market this product have thrown me a curve. For years, I have bemoaned the fact that most of the upgrade and development efforts that went into the SigmaPlot/SigmaStat software seemed to be biased to the plot side. When I observed that the new package was merely named SigmaPlot, and I further failed to find SigmaStat integration features (the stuff that connects the two programs), the natural conclusion seemed to be that the statistical program was jettisoned in favor of the graphics.

The above introductory narrative is intended to alert the reader to this editor's long-time love affair with SigmaStat. It was the first statistical software that I used, (seemingly) the first to make a seamless transition from DOS to Windows, and the very first to offer that wonderful Wizard to we befuddled amateur statisticians. My introduction to SigmaPlot came much later, and use of that was only stimulated when the two became integrated. Later on, a pharmacology menu was added and the usage of the plotting software was greatly extended. Of course, the new version has added further graphics and helps to make an already useful program even easier to use. It is now a complete package of publication-quality graphics software with analytic and presentation tools.

Highlights of the most powerful features include:

- the graph wizard
- a powerful nonlinear curve fitter
- a very large data worksheet (32 million rows by 32,000 columns)
- full range of SigmaStat statistics
- a mathematical transform language

A brief listing of the new features in this version can be found in Table 1.

Table 1: Notable New Features

- Complete advisory statistical analysis features
- Global Curve Fitting
- Improved standard curves macro
- New 2-D vector plot graph type
- Improved 3-D graph customization
- Pre-formatted worksheets
- New updated user interface
- 100-percent Vista compliance
- Import Excel 2007 files directly into SigmaPlot
- Automatic updating of quick transforms
- Import/export EMF files

Over the years, the software seems to have drifted more into the realm of the biochemists and biologists. For a long time, there has been a 'Pharmacology' choice on the main menu bar that boasts some ligand binding and enzyme kinetic capabilities, as well as a nifty curve fitting section. Now, extra modules are available to bulk up these functions and to add electrophysiology analyses.

Getting started

SigmaPlot 11 runs on Windows and is certified on the following platforms and systems: NT, 2000, XP, Vista, and Microsoft Office 98 and 2000. This review was done on the Windows Vista platform, and preliminary testing revealed no obvious defects. Hardware requirements are modest and include 64 MB of RAM, 48 MB hard drive space, a CD-ROM drive and an SVGA/256 color graphics adapter.

Upon initial boot-up, the software displays the Quick Start Menu (Figure 1), which is itself a Wizard and allows the user to create and open notebooks or to make a graph. This feature can be turned off so that the Desktop is displayed. The Desktop contains the standard windows menu and toolbars with custom graphic icons, a space for the worksheet and a navigator pane. Rather than spend time on describing the graph style Gallery and Templates, let's do a few simple examples and present the features in tabular form for a fast overview. To begin, data may be imported from other databases and statistical programs such as SAS, Minitab and SPSS, as well as spreadsheets such as Excel and Lotus 1-2-3. In addition, data can be easily cut and pasted from others (e.g. JMP, Origin and Prism). Once the data is in, the worksheet operates in a manner that will be familiar to most spreadsheet users. A useful feature is the ability to actually open a blank Excel worksheet within SigmaPlot and to use that for the grunt work.

Graphics

Once data has been entered, graphics may be created from a menu item by clicking on an icon, or by use of the graph wizard (Figure 1). I had always found the data arrangement to be a bit tricky for the 3-D graphics, especially mesh and contour plots. Now, however, the manual and on-board help somewhat simplify the task. Once the proper arrangement is identified, it is a simple matter to step through the Wizard choices to produce the plot. The wide range of plots available is listed in Table 2.

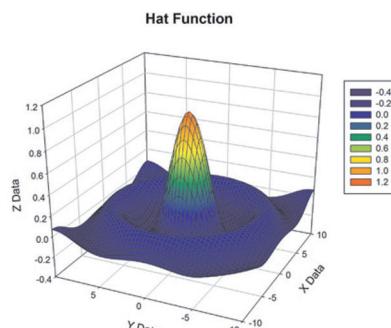


Figure 2: 3-D graphics, such as this hat function, are easy to create.

Table 2: Available Plot Types

2-D plots

- 2-D vector plots — 2 types
- Scatter — 14 types
- Scatter and line — 10 types
- Vertical bar — 2 types
- Vertical, grouped bar — 2 types
- Vertical, stacked bar
- Box — 2 types
- Contour, line and filled — 2 types
- Ternary — 3 types time-series
- Pie
- Needle
- Quadrant
- Area plots — 4 types
- Line — 4 types
- Step — 8 types
- Horizontal bar — 2 types
- Horizontal, grouped bar — 2 types
- Horizontal, stacked bar
- Polar — 3 types
- Histograms — 6 types
- Bubble
- Control charts
- High-low-close, range, quartile
- Population

3-D plots

- Multiple, intersecting plots with hidden line removal, smooth or discrete shading, transparent or opaque fills, and light source shading
- 3-D rotation
- Perspective preview
- Scatter
- Bar
- 3-D line — trajectory
- Mesh
- Contour
- Waterfall
- Improved 3-D graph customization

Graphs Created through Transforms

- Gaussian cumulative distribution
- Area — shading under and between curves
- Z plane design
- Vector
- Kaplan-Meier survival
- Frequency
- Complex control charts
- User-defined axes

Once a plot is produced, there are many customizations that can be applied beyond the usual line color and thickness. The most intricate of labels can be applied, and color schemes 11tion, Quick Transforms and Macro recording, intricate and colorful publication-quality graphics are very easy to make (Figure 2). The Web site shows some very eye-catching efforts that better demonstrate the possibilities (www.sigmaplot.com/products/sigmaplot).

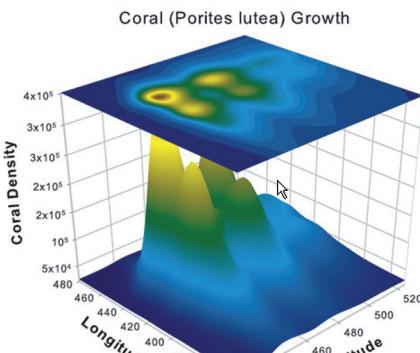


Figure 3: 2-D density plot superimposed upon 3-D graphic

Statistics

Now, as to the statistics... SigmaStat is there, alive and well! Over the years, the menu has been bulked up to add frequently requested tests, and more diagnostics and helpful explanations have been added to the repertoire. The experienced analyst has the choice of either selecting a named test from a drop-down menu and hitting a run button, or of selecting a class of tests and drilling down to a single test from the main menu. Novices still have the Advisor Wizard to help them navigate the maze by asking leading questions in terms of what they want to do (e.g., describe, predict, compare, measure) with the data.

Although I can't say enough good things about the statistical helps in this area of the program, there are still pitfalls for the beginner.

For example, by clicking on a column of the first nine integers (i.e. the data is merely the numbers one through nine) and asking for a normality test, a sufficiently large p-value is generated that suggests to the novice that the data come from a normal distribution. Well, they may; but in that small a sample, it's hard to say for sure.

So, the Shapiro-Wilk small sample size test is used in the background as a normality check prior to group comparisons, as is an equal variance test. The results of these tests will often shuttle the novice to non parametric tests when normality and equality of variance may be misleading in small sample sizes. Luckily, there are power tests to further assess adequacy. However, the new user may already be buried under the "No" and "Do Not Test" results found in the multiple comparisons.

Documentation

Did I mention that the software comes with two fine manuals, and that the User's Guide Part 2 (Statistics) is well-written and does a masterful job of educating the new user, as do the Help menu items under Search? This last function works very well, as I ha no problem finding the proper information for a variety of topics with either single words or phrases.

Minor gripes

Being overly effusive in the statistics area, I'll return to earth with several minor gripes on the plot and menu sides.

- In the navigation area, it was not obvious that one needs to double-click on a section to get there, as some applications perform these functions with a single click.
- Although perhaps reasonable upon reflection, it is not immediately obvious that File/new has to be selected to get the import function to appear on the menu.
- In the graphics area, some things that should be simple sometimes get quite cumbersome, such as having to click on a graphic to call up a dialog box, then select a tab and finally use sliders to rotate a 3-D graphic, as opposed to just clicking and dragging on the graph.
- Removing outliers is also slow, as more steps than necessary are involved. As I've stated, however, these are minor issues.

Summary

The combination of these two programs is still a dynamite duo and the interested reader is highly encouraged to download a 30-day demonstration copy. It is not at all difficult to get started and quickly produce sophisticated graphics and analyses.

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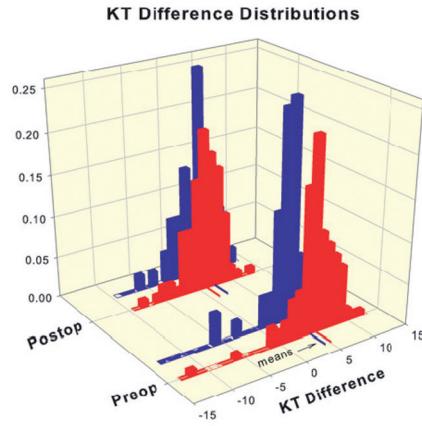


Figure 4: Distributional comparisons

Online-Version Scientific Computing:

<http://www.scientificcomputing.com/SigmaPlot-11-Now-with-Total-SigmaStat-Integration.aspx##>

Scientific Computing E-Magazine:

<http://editionsbyfry.com/ActiveMagazine/getBook.asp?Path=SCII/2009/01/>

01&BookCollection=SCII&ReaderStyle=WithPDF&Page=23&emailaddress=nhasthak@systat.com

Artikel im PDF-Format downloaden unter: http://www.systat.de/PDFs/Rev_SPW11_Wass.pdf

Artikel

User-defined transforms – useful feature of SigmaPlot

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April 2009

SigmaPlot's unique feature of using custom-made transforms not only allows various convenient calculations with data in a worksheet but also enables the construction of theoretical curves, for example. The latter was an argument for using this program in dose-response curve studies in the field of pharmacology [1, 2] first and in toxicology [3], more recently. To illustrate how useful working with user-defined transforms is, we want to give a few examples here.

The Worksheet functions we use most are "col" and "cell" to read data from the worksheet and to put the transform result into a specified column or cell. The latter can be done in two ways as exemplified below.

"Absolute" and relative effects

In dose-response curve (DRC) studies we sometimes observe that the minimum of a curve starts at higher values than zero and/or the maximum is below 100 %. For certain operations and better visual comparison of curves it is an advantage to transform absolute into relative effect values between 0 and 100 %.

The transform below*, shown for substance A, copies original y-values into the next column, first. Relative effects of A (relA) are calculated from the maximum (max) and minimum (min) of a Standard 4-parameter logistic curve, run previously, and the original effect values. Relative effects of A (relA) then are placed into column 2 by the "put into" function.

;Relative effects Std-Logistic

col(3)=col(2)

```
maxA=cell(21,2)
minA=cell(21,1)
deltaA=maxA-minA
delta3=col(3)-minA
relA=(delta3/deltaA)*100
put relA into col(2)
```

* Please note: the syntax for the transforms below are for standard UK & US settings; standard continental users would want to substitute comma decimals and semicolon list separators

Absolute and relative effects are illustrated by DRCs of ethyl bromoacetate (EBAC) at 15, 30, and 45 min of incubation in Fig. 1 and Fig. 2. It is evident that the EC50 is reduced at longer exposure durations from 1.03, 0.49, and 0.33 mg/L respectively, regardless of the type of presentation. Fig. 1 shows an increase in the bottom of the DRC from 3.8 to 16.6, and 27.4 % as the time of testing increased.

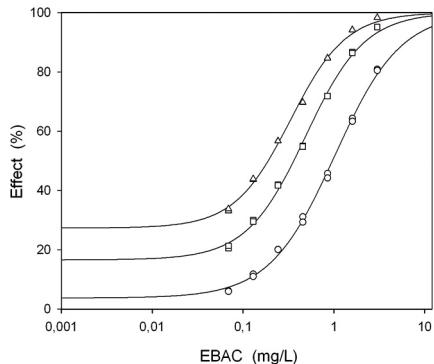


Fig. 1 DRCs of EBAC at 15, 30, and 45 min incubation, EC50s and time-dependent toxicity (TDT). “Absolute” effect values

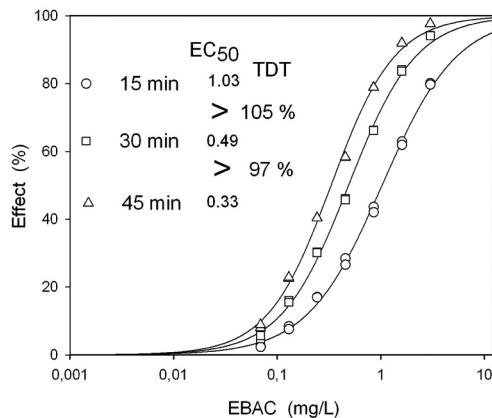


Fig. 2 analogous to Fig. 1 but with relative effect values

This example was chosen because it also illustrates time-dependent toxicity, described below.

Time-dependent toxicity

Irreversible action of toxic agents increases with time of exposure.

Calculation of time-dependent toxicity (TDT) [4,5] is based on the respective equation

$$E = c * t$$

where E is the effect, c the concentration, and t the time of exposure. From this relationship it follows, for instance, that doubling the time of exposure leads to the same effect when the concentration c is reduced to 1/2. Time of incubation in our experiments was 15, 30, and 45 min, respectively. Concentration c is the EC50 determined by the 4-parameter logistic function and listed in cells (21,3 – 23,3) before running this transform. TDT is expressed as percentage of maximum calculated by the equation referred to above.

‘Time Dependence col 21-23

```
c15=cell(21,3)
c30=cell(22,3)
c45=cell(23,3)
```

```
TDT30=100*((c15-c30)/(c15*1/2))
put TDT30 into cell(22,6)
```

```
TDT45=100*((c15-c45)/(c15*2/3))
put TDT45 into cell(23,6)
```

```
TDT45x=100*((c30-c45)/(c30*1/3))
put TDT45x into cell(23,7)
```

Fig. 1 and 2, respectively, show the calculated TDT values at 30 min vs 15 min (105 %) and at 45 min vs 30 min (97 %), demonstrating about 100 % time-dependent toxicity [6]. The three DRCs of EBAC exhibit a slight increase in slope over the time of incubation from 1.20 to 1.41, visually evident in Fig. 2.

Effects in combination

Fixed-dose experiments

We are often interested whether the effects of an agent A are affected by a certain, (fixed) dose of an agent B, with respect to synergism (or potentiation) or antagonism. When B exerts an effect on its own similar to that of A we can compare, for instance, the experimental dose-response curve (DRC) of A alone and in the presence of B with theoretical curves of two models of combinations, dose-additivity and independence.

Dose-additive combinations

are characterized by an effect in combination as a result of a certain dose of A in the presence of B. This effect is expressed as caused by an additional dose of A which is equieffective with a given dose of B. This type of combination considers B to be acting like A, for example by binding to the same receptor. Hence, as a general rule, agents that show a common site of action will give a combined effect not different from dose-additive.

We can apply the following transform. There, xA and yA represent x/y-values of a curve A, and xB1eq and xB2eq are two fixed doses of B which are equieffective with a specified dose of A.

```
; A+Bfix Dose-additive curves
```

```
xA=col(30)
yA=col(31)
```

```
xB1eq=cell(29,1)
xB2eq=cell(29,2)
```

```
xADD1=xA-xB1eq
put xADD1 into col(35)
xADD2=xA-xB2eq
put xADD2 into col(36)
```

The additive curves are then defined by

xADD1 and yA and

xADD2 and yA, respectively.

Interesting examples are combinations of two agonists binding to one and the same receptor [2]. Even more interesting is the effect of a full agonist in the presence of a partial agonist with DRCs shifted to the right parallel to the additive curve [7] which can conveniently be constructed by a user-defined transform.

Dose-additivity is exemplified here by β -aminopropionitrile (β APN) alone and in the presence of a fixed concentration of β APN, i.e., a “sham combination” in fact (Fig. 3). Whereas the experimental DRC of β APN in combination with itself is close to the dotted line of dose-additivity [8], this phenomenon is not observed in Fig. 4 with β APN in the presence of a differently acting agent penicillamine (PNC) under otherwise identical experimental conditions [9]. Here, the experimental curve for the combination lies about in the middle between the dose-additive curve and the theoretical curve for independence, described below.

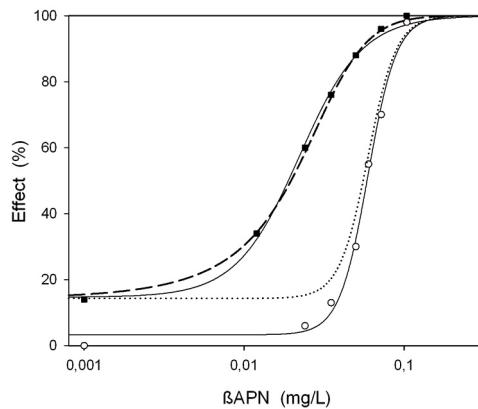


Fig. 3 DRCs of β APN alone and in the presence of a second sample of β APN. Example of a dose-additive combination

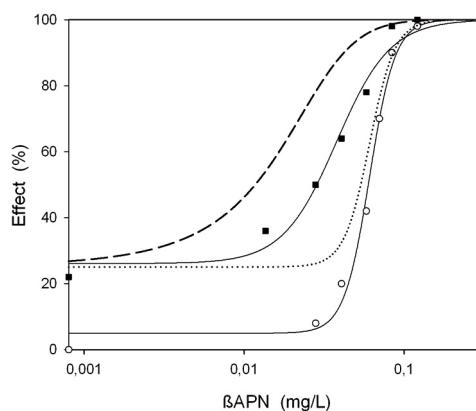


Fig. 4 DRCs of β APN alone and in the presence of a fixed concentration of PNC. Example of a non-additive combination

Independence

This type of combination assumes that the effects of A and B are independent in action. Again, a user-defined transform can nicely calculate curves of independence.

When we analyze DRCs of A alone and in the presence of a fixed dose of independently acting B, the ED₅₀ of A as well as the curve slope remains unchanged, hence, the relative effects remain unaffected. This combination can also be seen as relative effect-addition.

Independent effects expressed as percent of maximum of agents A and B can be calculated by

$$A+B = A + (B(100-A)/100)$$

Given that percentage effects are y-values of curves in specified columns, for example:

$x_A = \text{col}(30)$, $y_A = \text{col}(31)$,

$y_{B1} = \text{cell}(32,1)$, $y_{B2} = \text{cell}(33,1)$,

a rather simple transform will give us the x/y-values of independent curves of A+B (in columns 37 and 38). Note that the transform below calculates two curves which are corrected for eventual background of A = $\text{cell}(21,1)$.

;A+Bfix Independent curves

```
yA=col(31)  
yB1=cell(32,1)-cell(21,1)  
yB2=cell(33,1)-cell(21,1)
```

```
ind1=yA+(yB1*(100-yA)/100)  
put ind1 into col(37)
```

```
ind2=yA+(yB2*(100-yA)/100)  
put ind2 into col(38)
```

Independent effects in combination can be calculated for effects expressed as a fraction of maximum by the equation

$$A+B = A + B - (A * B)$$

Note that curves of independent effects are characterized by unchanged EC50s and slope values of A.

Summary and Conclusions

Among other things, described above, user-defined transforms, especially in DRC-studies, can give valuable hints regarding the site of action of agents tested.

Common or different site of action?

From biochemistry and physiology to pharmacology and toxicology DRCs are a valuable tool in research, especially for, but not limited to, discerning between common or different action of the agents [10] under study. The use of theoretical DRCs in fixed-dose and in mixture experiments has given us insight into mechanisms of drugs and toxic agents. Another user report deals with mixtures.

A common mechanism among agents requires that their effect in combination is dose-additive or comes close to it if additional mechanisms come into play. Independent effects can occur with differently (and reversibly) acting agents, e.g., with neuroprotective agents [11] or with certain drugs in combination [12].

Effects greater than predicted by additivity and independence

User-defined transforms such as those described above are also advantageous for describing and interpreting effects greater than dose-additive or independent. It is generally agreed upon that greater effects than expected by the theoretical model of dose-additivity represent synergism. DRC-studies also allow a uniform characterization of potentiation [13, 14], reflected by an increase in potency of an agent A caused by B; characterized by a shift of the DRC's ED50 to lower concentrations, as illustrated by Figures 5 and 6, characterized by the dose ratio (DR) = 13 (Fig. 5) and 59 (Fig. 6).

Potentiation in these two examples can be explained by different actions in sequence: Adenylyl cyclase activator plus a phosphodiesterase inhibitor (PDE-inhibitor) in Fig. 5, and two agents blocking the synthesis of tetrahydrofolate (THF) sequentially in Fig. 6.

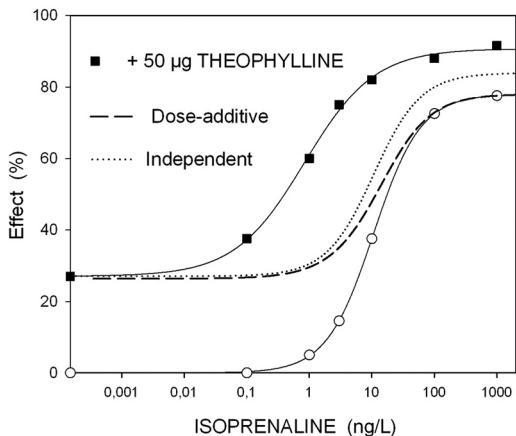


Fig. 5 DRCs of Isoprenaline alone and in the presence of a fixed concentration of theophylline [2]. Example of a potentiated combination.

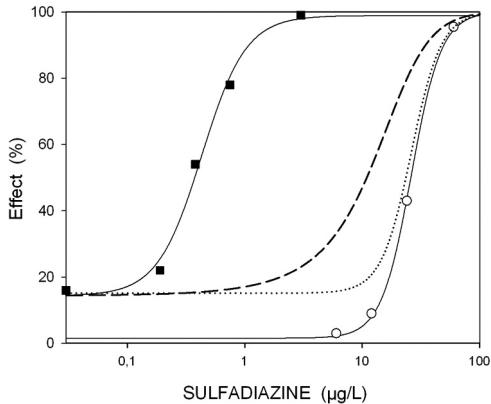


Fig. 6 DRCs of Sulfadiazine alone and in the presence of a fixed concentration of Pyrimethamine [15]. "Classical" example of a potentiated combination.

Different experiments with numerous agents, drugs and different toxic agents revealed that the relationship between additivity and independence differs. In experiments with agents showing rather shallow DRCs (mainly in physiology and pharmacology) independent effects are greater than additive, for which Fig. 5 is a good example. Isoprenaline shows a curve slope = 1.15. With other agents (mainly in toxicology) additive effects are greater than or about equal with independence, depending on the steepness in slope of DRCs. This fact is exemplified in Fig. 6 with Sulfadiazine exhibiting a slope = 3.4.

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Veranstaltungen

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Mittwoch, 13. Mai 2009, 14 Uhr

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Tech Tipp

Tech Tipp: Histogramme mit unregelmäßigen Intervallgrenzen

Mit SigmaPlots `histogram`-Transformation können Sie Histogramme mit unregelmäßigen Intervallgrenzen erzeugen, um ungleich verteilte Forschungs- oder Untersuchungsergebnisse optimal darzustellen.

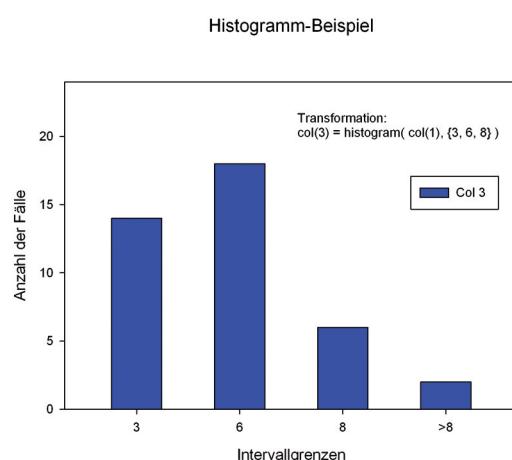
Geben Sie dazu die Intervall-Obergrenzen - als Zahlenfolge in geschweiften Klammern - als zweiten Parameter der `histogram`-Transformation an (s. Beispiel). Alternativ dazu können Sie die Folge der Intervall-Obergrenzen auch in eine freie Arbeitsblattspalte eingeben und in der Transformation darauf verweisen.

Beispiel:

`col(1)` enthält die Rohwerte
`col(2)` enthält die Folge der Intervall-Obergrenzen

Die folgende Zeile berechnet die Intervall-Häufigkeiten:

`col(3): histogram(col(1),col(2))`



Anmerkung: Dezimal-/Listentrennzeichen für Windows 2000/XP

Dezimal- und Listentrennzeichen beim Import von Textdateien, bei Transformationen und beim Curve Fitting:

Das aktuelle Dezimalzeichen bestimmt, ob über die Tastatur eingegebene oder importierte Daten als Text (linksbündig im Arbeitsblatt) oder als Zahlen (rechtsbündig) aufgefaßt werden.

Das Listentrennzeichen betrifft die Syntax von Transforms- und Fit-Gleichungen:

col(1)= data(1,100) bzw. col(1)=data(1;100)

SigmaPlot übernimmt (jeweils beim Programmstart) die Einstellungen für Dezimalzeichen und Listentrennzeichen aus der Windows-Systemsteuerung > Ländereinstellungen bzw. Regionale und Spracheinstellungen.

Dabei sind diese beiden Kombinationen gültig:

- a) Dezimalzeichen = Punkt, Listentrennzeichen = Komma ODER
- b) Dezimalzeichen = Komma, Listentrennzeichen = Semikolon

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ab 5 Anwendern. Diese Lizenzform wurde für Multi-User ohne simultane Anwender entwickelt.

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