

Computer Aided Education and Training, Pharmaceutical Applications

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University of Bath,



**Pharmacy Consortium for
Computer Aided Learning**



**Commercial and Academic
Services Ltd.**



University of Bath
School of Pharmacy and Pharmacology

**Lecturer in : Pharmaceutics
 Microbiology
 DNA Technology
 Industrial Pharmacy
 Software Development**

Third generation pharmacist



Pharmacy Consortium for Computer Aided Learning

A consortium of all 20 schools of pharmacy in the UK to promote and co-ordinate the use of computers in undergraduate teaching. Founded in 1992

In 2007, over 800 affiliated Schools of Pharmacy in 40 countries



Objectives of the consortium

- to encourage best practice in the use of computers in pharmaceutical education.
- decide on academic content
- to avoid duplication of effort
- to share resources
- to plan software production
- to ensure a common delivery platform
 - for hardware
 - for software
- sustainability



**Commercial and Academic
Services Ltd. (CoAcS Ltd)**

**A UK based company specialising in the application
of computers and information technology to the
pharmaceutical profession**

**Activities include marketing, distribution and support of
PCCAL software**

www.coacs.com

Computer Aided Education and Training - Pharmaceutical applications

Content	-	Content
Pedagogy	-	Educational methodology
Technology	-	Hardware, software delivery
Operation	-	Maintenance, support, sustainability.



Demonstration of Packages

In the live presentation the packages will be shown in operation. In the powerpoint presentation they are represented by one or more representative screen shots.

Nomenclature Of Organic Compounds

(version 3.0)

- ▶ **Alkanes**
 - ▶ Introduction To The IUPAC System
 - ▶ Identifying The Parent Hydrocarbon
 - ▶ Numbering The Carbon Atoms
 - ▶ Identifying And Numbering The Substituents
 - ▶ Naming The Compounds
 - ▶ Multichoice Problems
 - ▶ Questions - Name The Compound
- ▶ Unsaturated Aliphatic Hydrocarbons
- ▶ Functional Group Nomenclature
- ▶ EXIT
- ▶ *Map* ▶ *Reset*



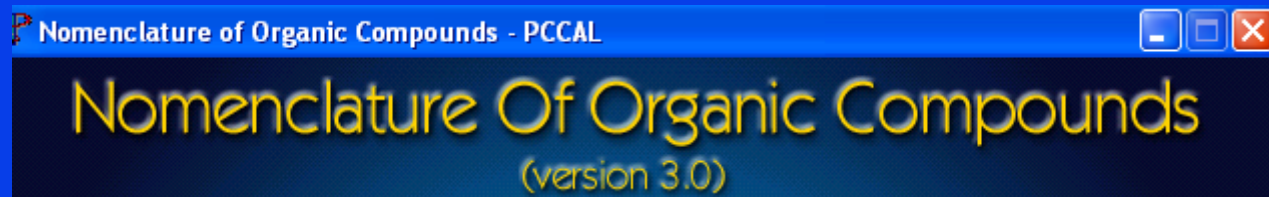
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Nomenclature of Organic Compounds is an example of an older CAL package that has survived.

Content has not gone out of date.

Perceived as a “boring” topic that has benefited from an alternative presentation media. *Educational effectiveness evaluated*

Well researched and evaluated *standardised* navigation tools

Written in Macromedia Authorware :

Can be delivered using Shockwave

File size just OK with current broad band

Requires Authorware Player on users PC

Not scalable, so small on high resolution screen.



ALKANES

Naming the Compound

Click on the three boxes below.



Aims

After finishing the activity,
what should you understand?



Objectives

After finishing the activity,
what should you be able to do?



Activity Contents



Map Of Package



Aims...



Return To Menu



About



Options

Prerequisites

What you need to know
before starting this activity?

Disclaimer

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Click To Remove Disclaimer

After looking at information, turn to next page.

Alkanes -
Naming the Compound

1 of 7

1 2 3 4 5 6 7

ALKANES - Numbering the Carbon Atoms in the Main Chain

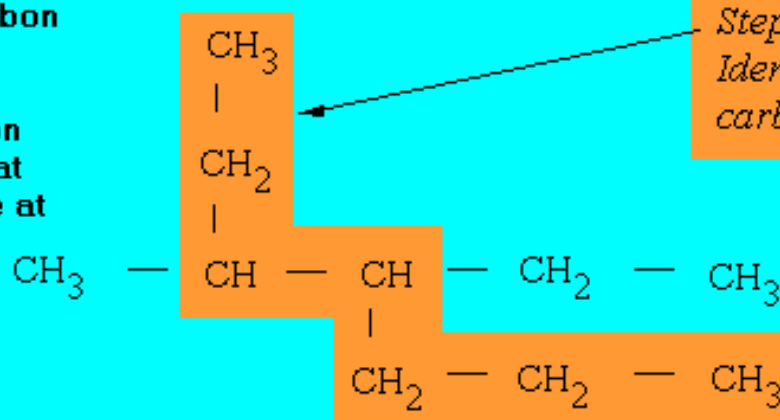
Click on the "Continue" button to work through the example (or press "Spacebar").

Step 2 Number the atoms in the main chain.

Number each carbon atom in the longest chain you have identified, starting from the end which gives the lowest possible numbers to the branch points.

Example

Identify the longest carbon chain in the following structure and attach numbers to each carbon atom in the chain so that the lowest numbers are at the branch points.



Step 1.
Identify the longest carbon chain

If you did not identify the longest carbon chain correctly, use this information to try numbering the atoms in the chain before looking at the rest of the solution.

Continue

Options

Alkanes -

Numbering the Carbon Atoms in the Main Chain

2 of 3

1 2 3



Pharmacological Experiments On Isolated Guinea Pig Ileum (version 4.0)



Experimental Setup

Agonists

- Agonists: Theory
- Constructing Dose-Response Curves
- Comparing Dose-Response Curves
- Agonists On Guinea Pig Ileum

Antagonists

- Antagonists: Theory
- Constructing Dose-Response Curves
- Comparing Dose-Response Curves
- Agonists/Antagonists On Guinea Pig Ileum

Receptors

EXIT



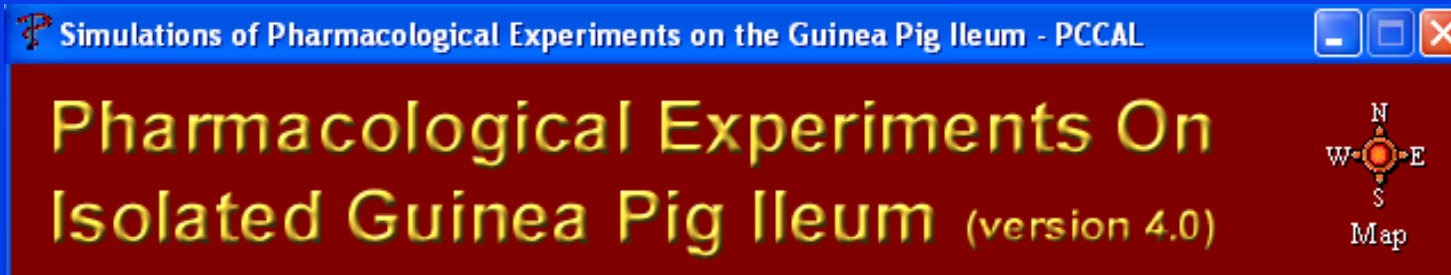
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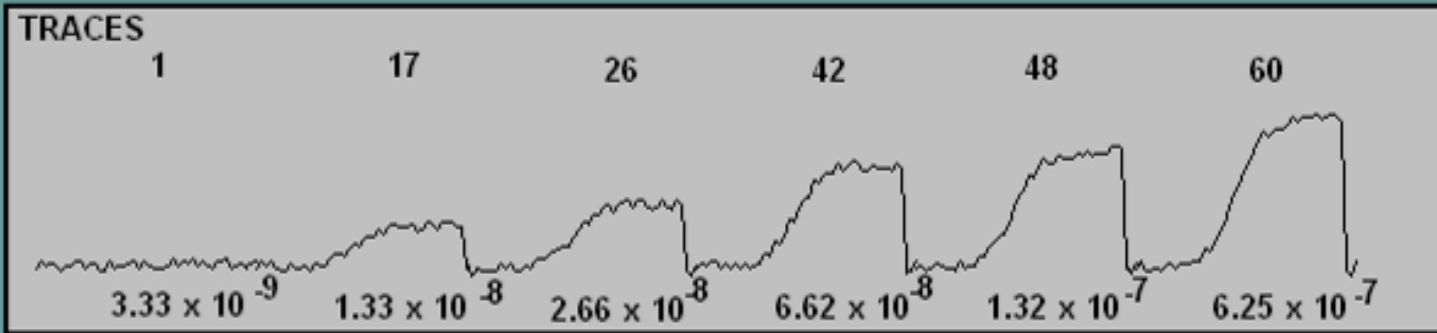




Pharmacological Experiments on Isolated Guinea Pig Ileum is another example of an older CAL package that has survived.

In this case its success is due to:

- Achieving learning objectives using a simulation that would otherwise require “unnecessary” practical manipulations.
- Avoiding the need for animal experiments.
- Saving expense incurred by running practical classes



Add ml of 10^{-5} M ACh

Amount (ml)	Moles Added	ACh Concentration in Organ Bath (M)	Response (mm)	Amount (ml)	Moles Added	ACh Concentration in Organ Bath (M)	Response (mm)
.01	1.00×10^{-10}	3.33×10^{-9}	1	.2	2.00×10^{-9}	6.62×10^{-8}	42
.04	4.00×10^{-10}	1.33×10^{-8}	17	.4	4.00×10^{-9}	1.32×10^{-7}	48
.08	8.00×10^{-10}	2.66×10^{-8}	26	2	2.00×10^{-8}	6.25×10^{-7}	60

After finding results, turn to next page.

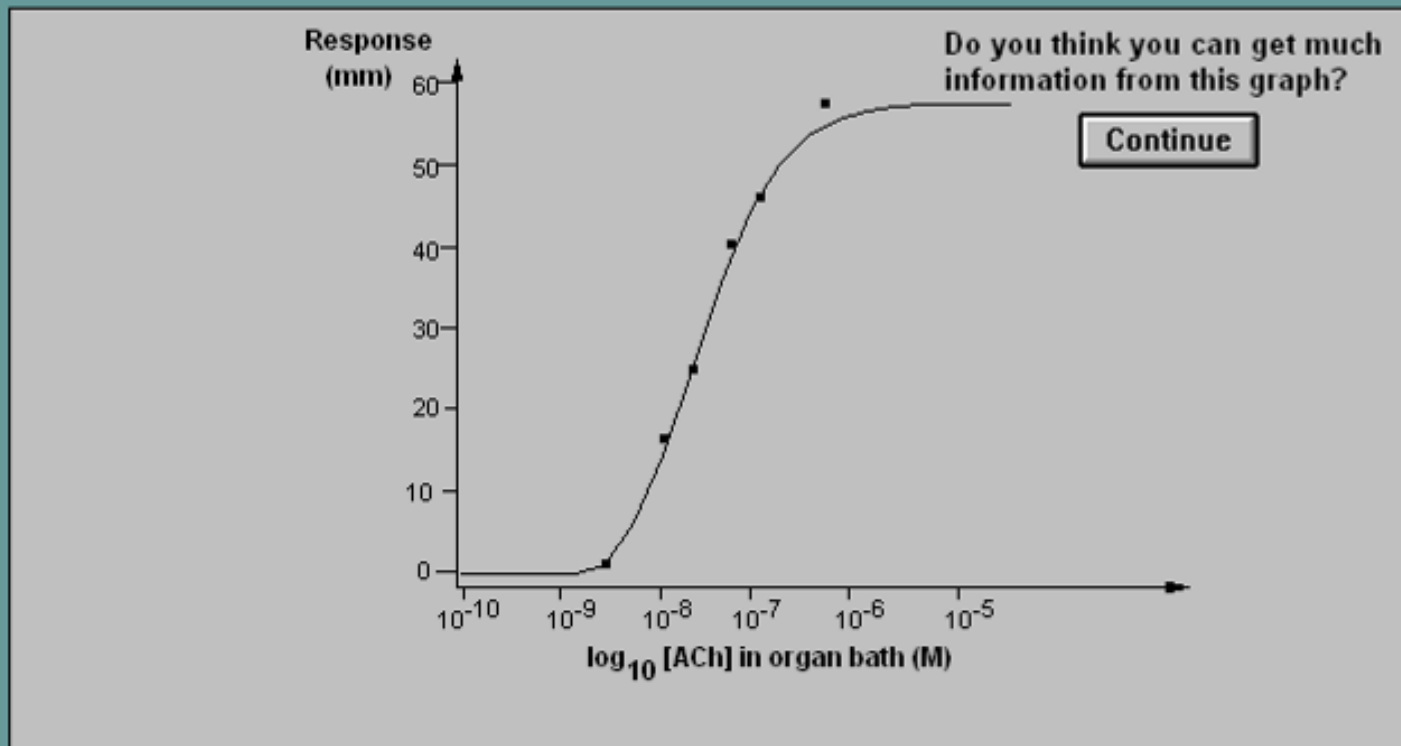
Agonists: Constructing Dose-Response Curves

8 of 14

1 2 3 4 5 6 7 8 9 10 11 12 13 14



Plotting the Dose-Response Curve



Options

Agonists: Constructing Dose-Response Curves

9 of 14

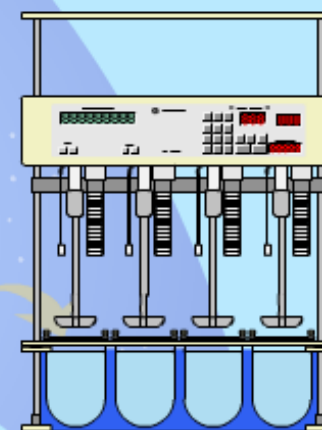
1 2 3 4 5 6 7 8 9 10 11 12 13 14

Dissolution Testing

Pre-Release Version 2.0

- **Foreword and Glossary**
- **An Introduction to Dissolution**
- **USP Apparatus 1 and 2**
- **Calibration of USP Apparatus 1 and 2**
- **Considerations for Automated Dissolution**
- **Regulatory Issues with Dissolution**

Click to activate and use this control



Exit ●

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Dissolution Testing

Pre-Release Version 2.0

Dissolution Testing is an example of a newer CAL package that should have a long lifetime.

Content requires some regular updating but this is offset by industrial interest in package and potential for financial support.

Written in Macromedia Flash :

**Can be delivered via Windows and Web browser
Flash player preinstalled on Windows and Apple
Small file size good with current broad band**

Scalable and can be full screen at all resolutions

- *continued*

Dissolution Testing

Pre-Release Version 2.0

Dissolution Testing is an example of a newer CAL package that should have a long lifetime.

- continued

Linked to a website so that licenced users can:

- **use the package**
- **take a test based on the package leading to certification**
- **receive feedback when reusing the package**

MiCAL V5

A Computer Assisted Learning Package For Medicines Information Staff

This Package Has Been Developed Jointly By:

London Medicines Information Service (Northwick Park)



And:

Commercial And Academic Services Ltd



Single User Licence. S/N 2954-5.0 Licenced to: Steve Moss, Dept. of Pharmacy, University of Bath,

MiCAL

A Computer Assisted Learning Package For Medicines Information Staff

Section 1:

● Teaching Activities

Section 2:

● Guide To Enquiry Form And
Example Enquiries 1-10

● Example Enquiries 11-20

● Example Enquiries 21-30

● EXIT

- ▶ Guide To Package
- ▶ MiCAL - Aims, Objectives
And Competencies
- ▶ Introduction To
Medicines Information Services
- ▶ Ethical Issues
- ▶ Information Sources
- ▶ Searching The Literature
- ▶ Critical Appraisal
- ▶ Writing And Referencing Skills



MiCAL is an example of a CAL package used with graduate pharmacists, specifically for training those requiring skills in Medicines Information.

It is made up of two sections :

- A section using traditional didactic methods to teach the concepts of providing Medicines Information and the background knowledge.**
- A section providing a number of interactive scenarios simulating the process of answering, researching and recording medicines information enquiries.**

Examples Of Standard Tertiary Information Sources

The following are some of the standard tertiary information sources.
Click on each textbook title to find out more about the source.



AHFS Drug Information



Applied Therapeutics -
The Clinical Use Of Drugs



British National Formulary



Drug Interactions by Stockley



Hansten And Horn's Drug Interactions,
Analysis And Management



Drugs In Pregnancy And Lactation by
Briggs



Full Text Databases



Martindale: The Complete Drug Reference



Medicines Compendium



Meyler's Side Effects Of Drugs



Therapeutic Drugs - Volumes 1 & 2 -
Dollery



Therapeutics In Pregnancy And Lactation -
Lee A et al

??? OVERALL QUESTIONS ???

OK, you are now ready to start the first section of this enquiry -
"Gathering The Initial Information For The Enquiry"

The phone rings....



Click Phone To Start

Sunlight and You

(version 1.5)

Login

To login, enter your details. When you are sure they are correct, click OK.

First Name:

Last Name:

School:

Sex (M/F):

Date of Birth: \ \

School Year:

Today's Date: \ \

Exit

OK

Sunlight and You

(version 1.5)

Sunlight and You was developed as part of a UK national programme to reduce the incidence of sunlight induced skin cancer.

It is an interesting educational model as it has a dual function:

- **It provides educational material**
- **It also collects data from the users as they work through the CAL package. It does this both by asking direct questions, but also by analysing their navigation through the package.**

Sunlight and You

Validation

Name: Steve Moss

School: Bath

Sex: M

Date of Birth: 20/04/1947

School Year: 11

Today's Date: 19/04/2007

If you are sure these details are correct, enter the validation code.

Go Back

Exit

OK

Sunlight and You

(version 1.5)

Introduction

Sunlight and You

Cells and Cancer

Safety in the Sun

Exit

Credits...

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Disclaimer

Know Your Skin Type

Skin types are divided into 6 general groups.
Unless your skin is naturally brown (group 5) or naturally black (group 6), the group you fit into depends on your answer to two questions:

Do you burn in the sun?

Do you tan after being in the sun?

Continue

 Options

Safety in the Sun

1 2 3 4 5 6 7 8

4 of 8

Know Your Skin Type

Can you guess the skin type of these people?

Click on the skin type to move the picture into place.



There may be more than one example of each.



Well Done!



That's correct.


Continue

Type 4: Tans easily, never burns.

Type 5: Indian or similar shade of brown skin.

Type 6: Black Afro-Caribbean skin.

Type 3: Tans easily, burns rarely.

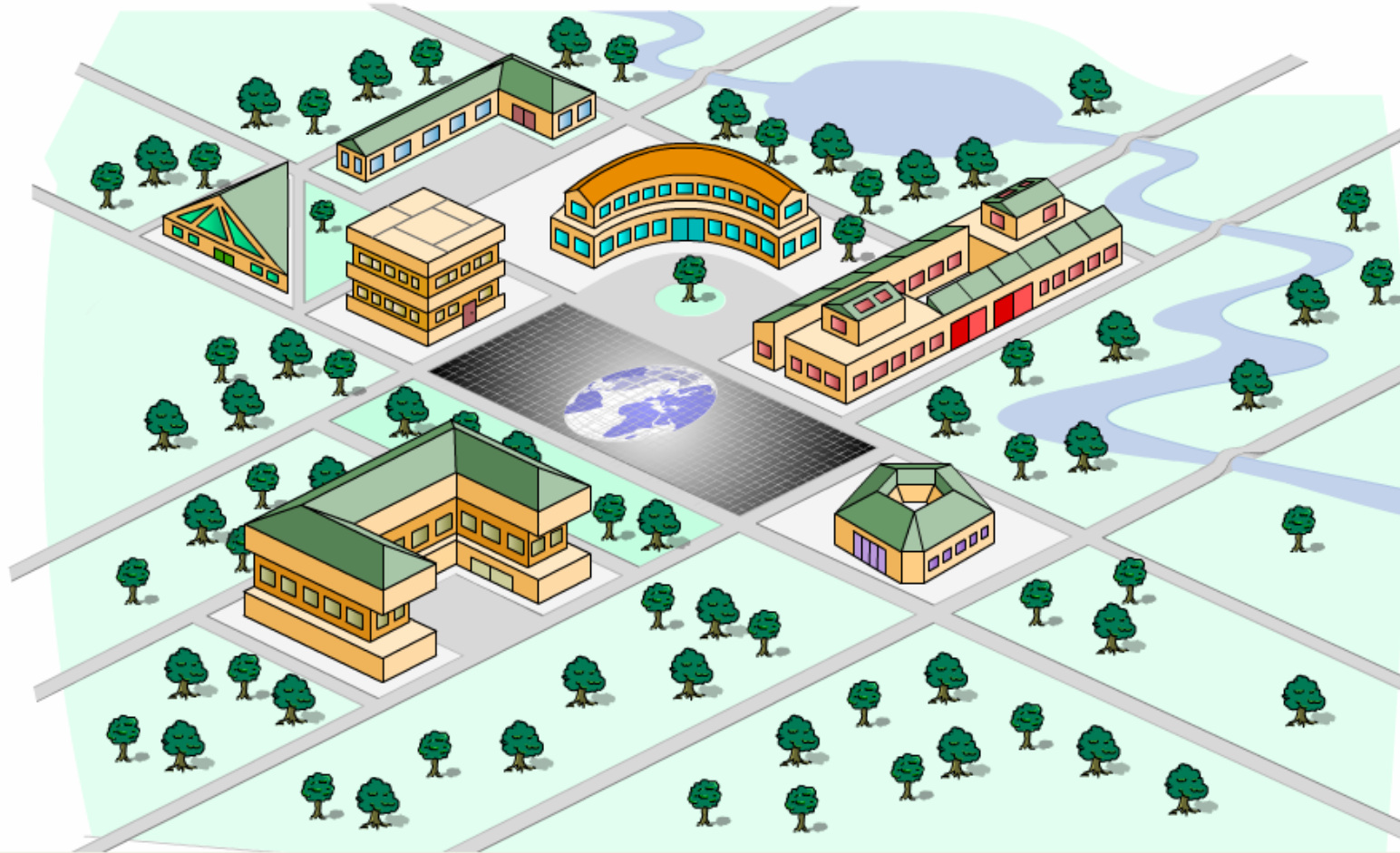
 Options

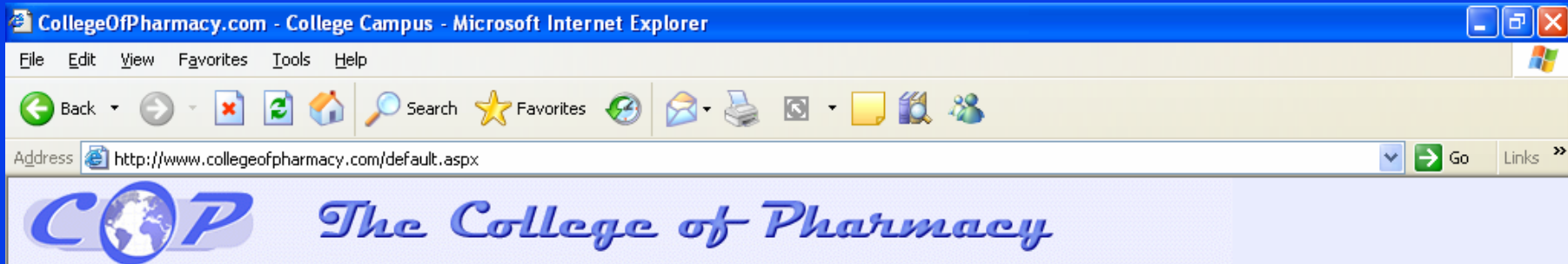
Safety in the Sun

1 2 3 4 5 6 7 8

4 of 8

COP The College of Pharmacy





collegeofpharmacy.com illustrates a different concept in delivery and also a variety of educational approaches,

It is a website designed for use by pharmacy students, faculty and practicing pharmacists and provides access to a variety of educational resources from any computer connected to the internet.

Resources include :

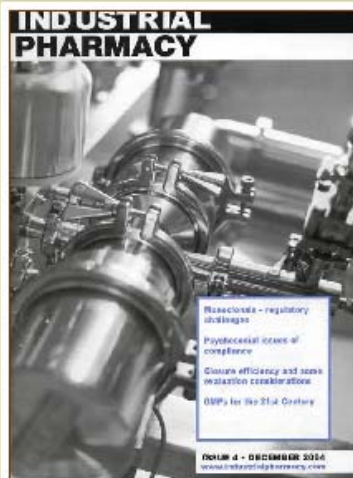
- **CAL packages**
- **Library**
- **Herb garden**
- **Lecture theatre**

Resources planned include :

- **Pharmacy museum**
- **Poster hall**
- **Pharmacy directory (pharmindex)**
- **Careers centre**



Journals search



Industrial Pharmacy

Journal website: <http://www.euromed.uk.com/?p=productsMore&iProduct=9>

Publisher: **Euromed Communications Ltd**

Publisher website: <http://www.euromed.uk.com>

This journal publishes articles on subjects related to the pharmaceutical industry.

[View Contents](#)

[View More Editions](#)

Herb Garden

INDEX SEARCH

Back Forward



Click on photo for more

Common Name: [common St John's wort](#)

Latin Name: [Hypericum perforatum](#)

Family: [Hypericaceae](#)

Constituents: [Straight chain saturated hydrocarbons C30](#)

Preparations & Products:

Medical Properties: [astringent](#)

Used in Treatment of: [menopausal neurosis](#)

Pharmacopoeia Monograph: [BHP, Cz P](#)

Listed in: [Commission E](#)

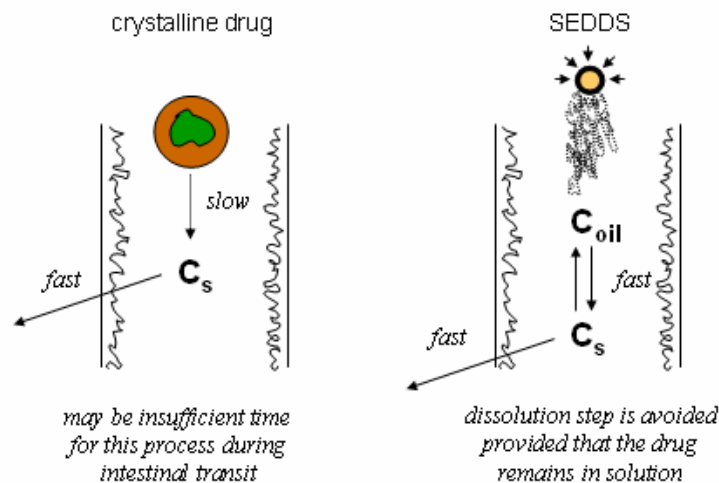
Click [here](#) to update information



Prof. Colin Pouton

Professor of Pharmaceutical Biology
at the Victorian College of Pharmacy,
Monash University

SEDDSs can provide a reservoir of drug in oil solution



Thank you