



**UNIVERSITATEA DE MEDICINĂ ȘI FARMACIE
„VICTOR BABEȘ” DIN TIMIȘOARA**

**PREPARATION OF BACHELOR DEGREE
PRACTICAL COURSES NR. 5-7**

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Technical Details of Manuscript Writing

Writing is a critical step in science although scientists are not trained to write.

Even very creative experiments and novel results will have dull impact if the manuscript is not written well.

Key to Writing Skills

- The path to writing well is to read excellent writers and write.....and write...and write.
- “Free write” your thoughts. Don’t worry about structure initially.
- Use the best paper in your field as a template and try to convert your free write-up into a format.
- Keep writing concise, dynamic and simple in construction.
- Convey enthusiasm in your writing so it attract the audience.

When to Write a Draft of Manuscript?

- **Best practice-** Prepare the figures and write the draft as the experiment is progressing
- **Second Best practice-** Write the first draft at a meeting where work is first presented. The experiment will be fresh in mind and free time in the evenings may be sufficient to write a draft.
- **Alternatively,** the script of a seminar can often be used as a starting draft.
- **The worst practice-** to write a paper after you have left the place (lab.) where the work was performed.

Divide and Conquer!!!!!!!

- Divide and work on.....

Eat an elephant bit by bit

- If you get stuck on a particular section, just skip to a different section that is easiest to write.
- *It means the easiest first and the most difficult latter.*

Four Questions of Manuscript Writing

What is the?

INTRODUCTION

What did you do?

METHODS

What did you find?

RESULTS

What does that means?

DISCUSSION

Parts of a Manuscript

Title

Abstract

Introduction

Methods

Results

Discussion

Acknowledgements

References

Title, key words and abstracts are used for electronic searches

Title- The Backbone of an Article

It indicates content and main discoveries and attracts the readers attention.

It decides whether article is worth reading or will get attention of the readers.

Go for the Journal instruction in writing titles.

Examples:

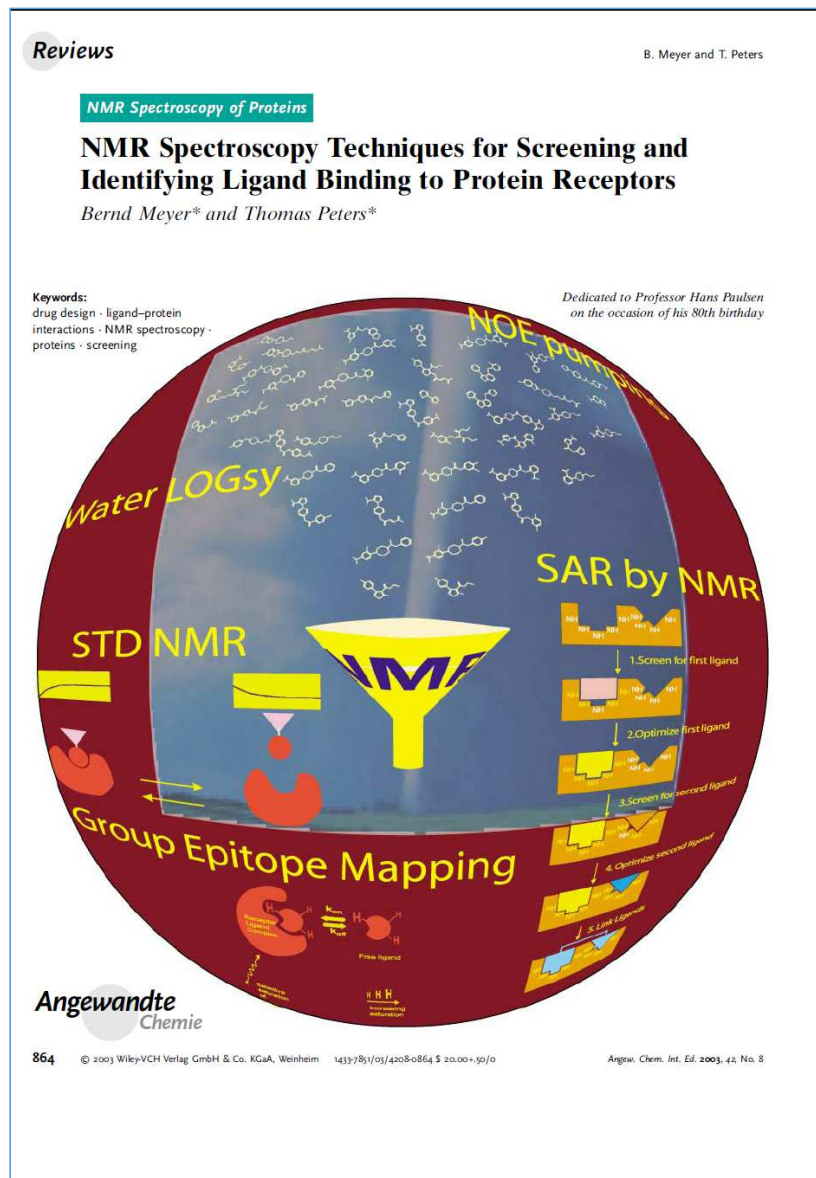
Good Title: The Natural Product Cyclomarin Kills Mycobacterium Tuberculosis by Targeting the ClpC1 Subunit of the Caseinolytic Protease (online article in *Angewandte Chemie International*, 11 May 2011)

Bad Title: Anti-Tuberculosis agent Cyclomarin.

**Attractive and Catchy
Title –**

**makes reader going
through the
article for sure**

**Graphics plays an
important role in
catching the eyes of
readers.**



The Impact of Article Titles on Citation Hits

- Most published articles are not cited- the title play a vital role
- Construction of an article title has a significant impact on citation frequency.
- By a study conducted by Thomas S. Jacques and Neil J. Sebire* there was a strong association between increasing title length and citation rate.

*J R Soc Med Sh Rep 2010;1:2. DOI 10.1258/shorts.2009.100020

The Impact of Article Titles on Citation Hits-Contd.

Reason:

- Electronic searches are now preferred over other means, which includes SciFinder, PubMed, Web of Science, Google Scholar, etc.
- These searches are based on the title or key word .
- Longer, comprehensive titles are more likely to contain given search terms.
- Therefore the title should provide clear description, finding of study

Nature's style -Manuscript Formatting Guide

Titles

- Titles do not exceed two lines in print.
- Titles do not normally include numbers, acronyms, abbreviations or punctuation.
- They should include sufficient detail for indexing purposes but be general enough for readers outside the field to appreciate what the paper is about.

3. DETERMINING THE TARGET POPULATION AND THE WORK SAMPLE.

POPULATION - TARGET WORK SAMPLE

The next step is the data collection, which is realized according to the proposed objectives, the type of study, the time allocated, the human resources and the financial resources available, so there are two ways of collecting:

I. The exhaustive collection - all the subjects of the population we want to study are included; this is difficult to achieve because of the high costs.

II. By sampling - it is the most commonly used method in medical studies. The target population represents the entire group of individuals who are interested in the investigator, from whom he or she can collect data, to subsequently describe and formulate conclusions about it. In the case of the study on the prevalence of tobacco use in a community, the target population will include all persons or groups involved in the processes related to the problem, that is, all of the community concerned in the study, as well as persons who have information about the research problem or who have by their status certain attributions in its management (people who smoke or have never smoked, persons who are part of a group / group in which they are smokers, etc.). Most of the time it is practically impossible to study the entire population, which is why most of the time researchers use the sampling method. It is very important for the specialist to define the population very carefully and completely before completing the sample, including describing the inclusion and exclusion criteria from the study population. The sample is generally chosen because:

- The target population is too large and cannot be studied as a whole.
- There is access for various reasons only to a part of the study population.
- Samples can be studied faster.
- The cost and resources needed for the study are lower.

III. In order for a sample to be representative it must meet at least two essential conditions:

a. be randomly drawn and the degree of heterogeneity of the individuals included in the sample to coincide with the specific one of the target population (the heterogeneous character in the case of smoking can be determined according to several variables: sex, age, smoking / non-smoking status, child / adult / old man, level of education, profession, etc.)

I. The size of the sample is one of the most common problems at the beginning of the study, because in the common mentality it is considered that its validity is given by the largest number of individuals included in the sample, but the number of participants considered acceptable to form a representative dependent sample the type of research. Thus, for analytical studies, 30 participants are sufficient to form a representative sample (it is accepted that from 30 subjects the distribution is normal), and for descriptive ones a number of 20% of the target population is sufficient. For small populations (under 100 persons) the sample is approximately equal to the population, for the average population (around 500 deputies) about 20% is sufficient and for larger populations (5000 persons) approximately 400 persons or 80% of the reference population estesesemnificativ. We can speak in broad terms of two sampling possibilities: by probabilistic (random) and nonprobabilistic (non-random) methods.

Probabilistic sampling is the most used method in medical studies and is the one indicated to achieve qualitative representativeness. Four types of probabilistic sampling are used in medicine:

1. Randomized simple sampling - the individuals that make up the sample are uniformly chosen and with an identical probability for each one to be chosen. Ex.: extraction of the individual's name by randomly extracting the persons to be included in the working sample.
2. Systematic sampling - involves the random selection of a displacement number, from which, adding a fixed, predetermined size, will result in a unit of the sample. Its size is determined by dividing the sampling base by the established sample size.
3. Stratified sampling - is the procedure in which one starts from a division of the population according to a certain criterion. The selection of the sample is done in several stages, selecting according to the same random simple procedure a number of subsamples the size corresponding to each layer in the total population. We want to study the use of tobacco products by subjects of different ages. We group subjects into preteens, adolescents, adults and then select a sample from each layer by simple sampling which will be questioned later, so we can find out the opinion of each age group.
4. Cluster sampling - is used when a certain population is composed of several heterogeneous groups from which we are to constitute the working sample.

The second method of sampling is the nonprobabilistic one, whose use is not indicated in medical studies, due to the lack of force regarding the possibility of applying the conclusions on the study population. In the case of this type of sampling, the selection of the subjects is therefore arbitrary and is based, first, on the personal judgment of the investigator, assuming a "reasonable choice". This includes the following methods:

1. Quota sampling - is the best known and most used non-random sampling procedure, limiting the subjectivity of the specialist in choosing subjects and imposing the framing of these choices in certain quotas. the population of the commune is known. It is composed of 52% women and 48% men, and according to the smoker / non-smoker status the distribution is 60% and 40% respectively. If the sample proposed for the survey wants to include 1000 persons, then it will have to be chosen: 520 women and 480 men; or 600 smokers and 400 non-smokers.

In this method the quotas can be of two types:

- independent - the variables do not depend on each other (the smoker / non-smoker variable does not depend on the female / male variable)
- linked - the variables are crossed, ie they depend on each other.

An important reason why quota sampling is used is that the specialist is no longer required to look for a particular person, but is left to find himself the persons who correspond to the quotas indicated.

2. Conventional or more random sampling - it involves choosing the components of the sample in the simplest way possible: by stopping and taking interviews, usually short, of people on the street or inside an institution, a shopping center, etc. Therefore, the members of such a sample are chosen only because they are at hand and are available to answer any questionnaire. By this very economical method, a sample is created that cannot be representative for a certain population or community.

The conclusions, of course, cannot be generalized to the population at issue. However, such a method is useful in the case of analytical studies which will subsequently be followed by descriptive studies which will involve probabilistic established samples.

2. Logical sampling - in this method the selection of the subjects of the sample is based on the specialist's reasoning regarding the most indicated features on which the members of the sample must possess. The latter establishes the sample taking into account certain purposes, which it pursues in its study, even though what results cannot be a fully representative sample. In the comm. You will thank the researcher, based on a logical analysis, to choose the institutions, households, families, etc. which they consider to be the most suitable for the use of tobacco.

The advantages of sampling research

- Operability (small number of cases investigated),
- Depth,
- Economics (time, staff, finance),
- Reduction of observation and measurement errors,
- Representativeness (by random choice). The sample parameters (mean, median, variance, etc.) are true information or estimators of the same parameters in the population.

Disadvantages of sampling research

- It cannot be used if the general community is small,
- Introducing a random error,
- Providing probable results,
- To ensure a safety threshold, it is necessary to increase the sample volume excessively,
- The phenomenon studied has a small limit of occurrence.

Errors in sampling research

- Systematic - difficult or even impossible to recognize. Appear in case of non-random extraction of cases in the sample constitution.

So a representative sample is a sample without systematic errors.

Example: In a survey by survey, which avoids remote housing, without access road, even if 90-95% of the possible cases are taken, the sample may not be representative, because there is a selection criterion.

- Random - can be recognized and the researcher can change the accuracy of the study, either by increasing the volume of the sample or by choosing an appropriate sampling plan.

The survey base includes the list of units that correspond to the target population.

The survey base can be constituted in 3 ways:

1. Random (best),
2. In layers (classes in a school),
3. In nests (households, families).

The basis of the survey in layers is characterized by an internal homogeneity and non-homogeneity between layers (in the class are children of the same age)

The survey base in nests is characterized by inhomogeneity within the nest and similarity between nests (in the family we have people of different ages, genders)

If the survey basis is established, there are 3 ways to carry out the sample:

- a) Draw - with a refund
 - without refund
- b) The process of using random number tables

c) The mechanical (or counting) step procedure
 1,2,3 N n - sample $N / n = K$
 $n / N = 1 / K \Rightarrow$ the fraction in the sample (shows how much of the population I took in the sample)

MAXIMUM ERROR LIMIT ACCEPTED

Sample errors can be calculated using the following mathematical expressions:

1. For quantitative characteristics

$$e_x = \pm \frac{\sigma_x}{\sqrt{n}}$$

$$\sigma_x^2 = s_x^2 \frac{n}{n-1} \quad n \leq 30 \text{ estimated variance in the population}$$

$$\sigma_x^2 = s_x^2 \quad n > 30 \text{ the variance in the sample}$$

n = the volume of the sample

2. For qualitative characteristics

By multiplying these sampling errors with the probability coefficient corresponding to the distribution that the respective characteristic has in the general community, the accepted limit error is obtained.

1. For quantitative characteristics

2. For qualitative characteristics

If $n > 30$ $t_{\alpha, v}$ is replaced by U_{α}

For: $\alpha = 0.05$ $U_{0.05} = 1.96$

$\alpha = 0.01$ $U_{0.01} = 2.58$

$\alpha = 0.001$ $U_{0.001} = 3.29$

α = risk v = degrees of freedom

The degrees of freedom are given by the number of independent random variants on which the considered statistics depend. In a series with "n" variants are "n-1" degrees of freedom.

The expression of the maximum limit error accepted is the basis for determining the sample volume.