OBSOLESCENCIA DE LA LITERATURA CIENTÍFICA:

Un mito académico persistente en la investigación universitaria venezolana

Fidias G. Arias

Un mito académico puede ser definido como una falsa creencia que se difunde en una comunidad educativa y que se manifiesta en contenidos erróneos que se enseñan o aprenden en cualquier área y nivel.

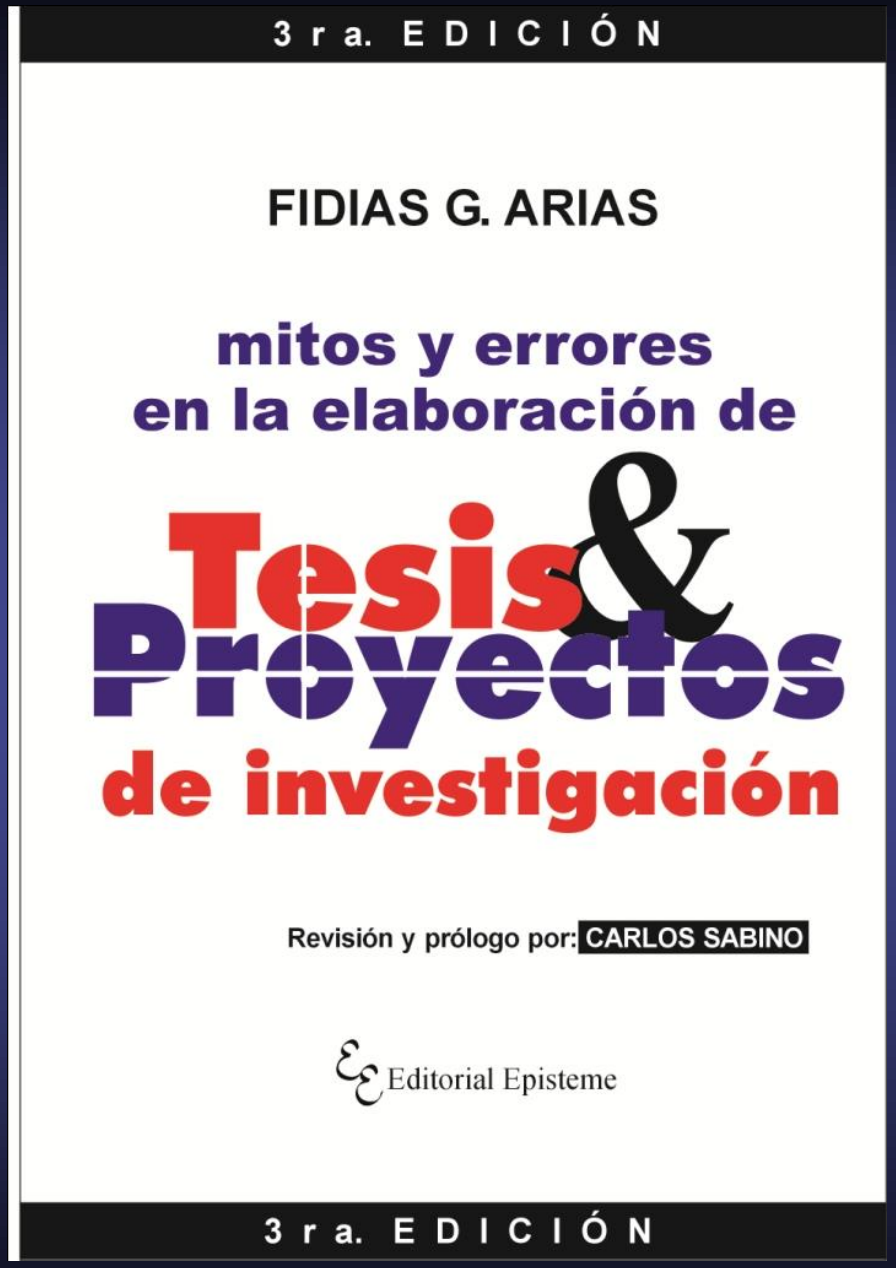
¡MENTIRA!

mitos y falsas creencias alrededor de la Lactancia Materna

3

dar pecho duele mucho y los senos se rompen

Los mitos en la investigación universitaria también son falsas creencias que se transmiten y se reflejan en la elaboración de proyectos, informes, artículos, tesis y trabajos de grado, específicamente en los aspectos metodológicos y formales.


3ra. EDICIÓN
FIDIAS G. ARIAS
mitos y errores
en la elaboración de
Tesis & Proyectos
de investigación
Revisión y prólogo por: CARLOS SABINO
Editorial Episteme
3ra. EDICIÓN

Un mito académico persistente en la investigación universitaria

La falsa creencia sobre la desactualización u obsolescencia de la literatura científica, concretamente, la supuesta caducidad de las fuentes citadas y el tiempo o período de vigencia de las mismas (cinco años) en las ciencias sociales y humanidades.

Un mito académico persistente en la investigación universitaria

En pocas palabras, el **mito** parte de la **falsa creencia** de que sólo se deben citar referencias con cinco (5) años o menos, en las ciencias sociales y humanidades.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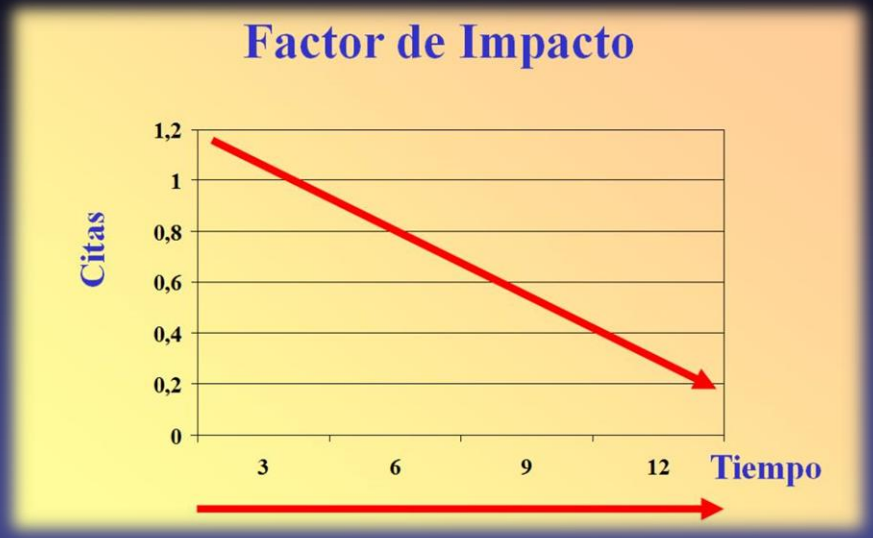
OBSOLETO

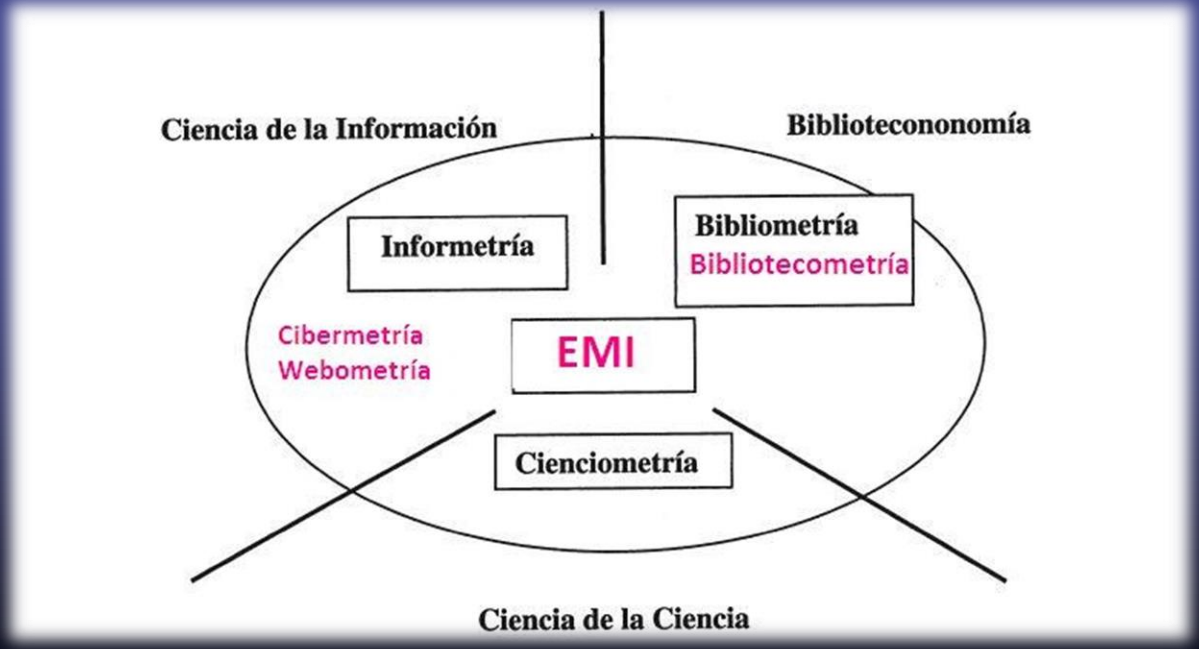
¿Cómo rebatir el mito anterior?

Con el apoyo de la bibliometría

La *bibliometría* es una especialidad que utiliza técnicas estadísticas para evaluar los productos de investigación a través de las publicaciones científicas. Esta evaluación incluye las revistas, los artículos, las referencias citadas y otros trabajos académicos.

$$A(n) \approx \frac{K}{n^2}$$





Ley del Envejecimiento u Obsolescencia de la Literatura Científica (Burton y Kebler, 1960; Price, 1965)

La obsolescencia o desactualización de la literatura científica es una *condición relativa* que presenta una obra cuando, a medida que transcurre el tiempo, disminuye la cantidad de citas que se hacen acerca de la misma.

Semiperíodo o vida media de la Literatura Científica

(Burton y Kebler, 1960)

Lapso en que ha sido publicado el 50% de la literatura citada en una especialidad. Este indicador bibliométrico mide la obsolescencia o envejecimiento de las publicaciones científicas *en cantidad de años.*

Semiperíodo o vida media de la Literatura Científica

(Burton y Kebler, 1960)

Implica que a mayor vida media, mayor será el tiempo de vigencia de las referencias. El semiperíodo o vida media de la literatura *varía según la disciplina*.

Semiperíodo o vida media de la Literatura Científica

(Burton y Kebler, 1960)

Física 4,6 años

Química 4,8 años

Fisiología 7,2 años

Matemática 10,5 años

Geología 11,8 años

AMERICAN DOCUMENTATION Vol. XI, 1960

THE "HALF-LIFE" OF SOME SCIENTIFIC AND TECHNICAL LITERATURES

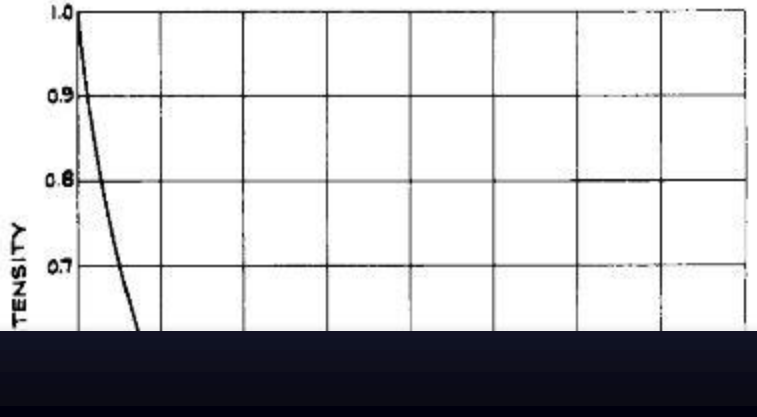
R. E. BURTON and R. W. KEBLER***

ABSTRACT

A consideration of the analogy between the *half-life* of radioactive substances and the rate of obsolescence of scientific literature. The validity of this analogy suggests the possibility of more accurate prognostications concerning the period of time during which scientific literature may be used and hence might help to guide the planning of library collections and technical information services.

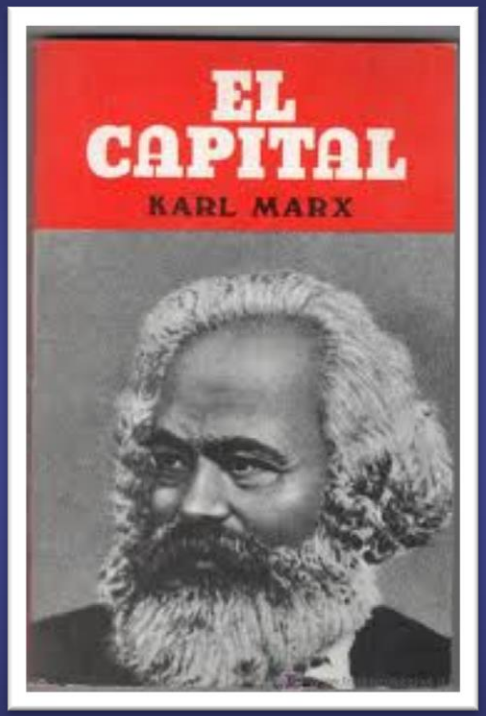
The concept of *half-life* is most familiar to the physicist and nuclear engineer who employ it to describe the decay of radioactive substances. Recently, however, the expression has been used by documentalists, some librarians, and other information "officers" to describe a totally different measure in a manner which implies a rather rigid analogy. The term was much in evidence at the International Conference on Scientific Information meetings in Washington in November, 1958. Unfortunately, unlike the physicists' use of the expression,

remaining material is the same as the half-life of the original mass.

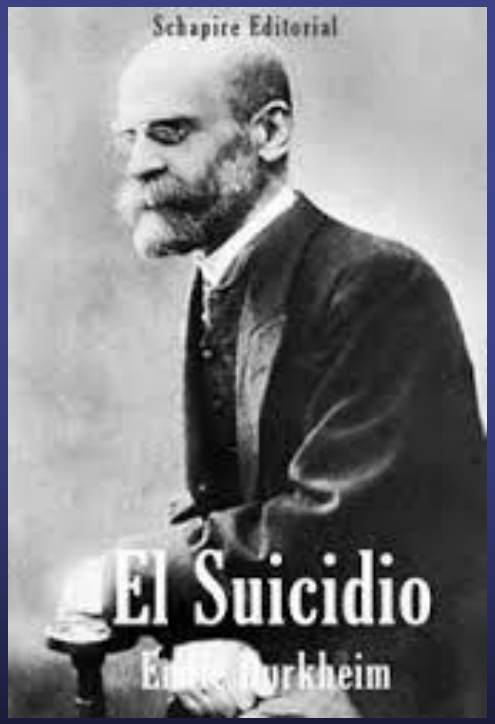


Literatura Clásica

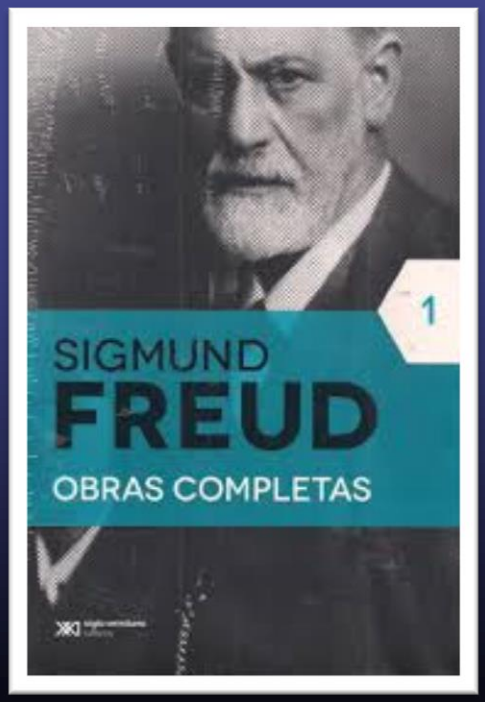
1776



1867

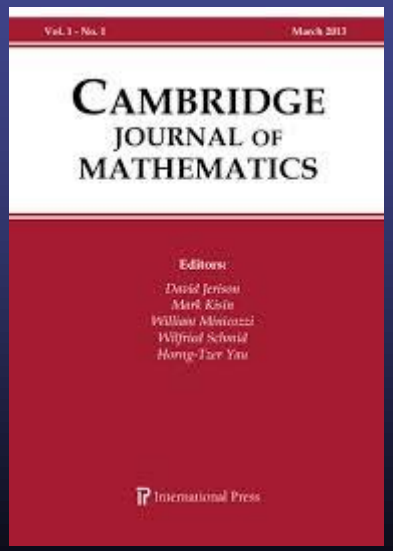


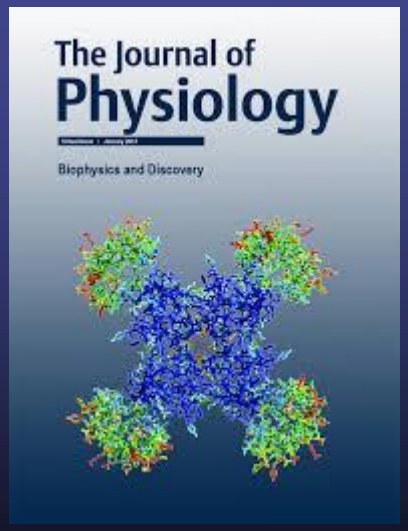
1897



1886

Literatura Efímera





equipment, and to Dr. G. E. R. Deacon and the captain and officers of R.R.S. *Discovery II* for their part in making the observations.

[1] Young, F. B., Gerrard, H., and Jevons, W., *Phil. Mag.*, **40**, 149 (1920).
[2] Longuet-Higgins, M. S., *Mon. Not. Roy. Astro. Soc., Geophys. Supp.*, **5**, 285 (1949).
[3] Von Arx, W. S., Woods Hole Papers in Phys. Oceanog. Meteor., **11** (3) (1950).
[4] Ekman, V. W., *Arkiv. Mat. Astron. Fysik. (Stockholm)*, **2** (11) (1905).

MOLECULAR STRUCTURE OF NUCLEIC ACIDS

A Structure for Deoxyribose Nucleic Acid

WE wish to suggest a structure for the salt of deoxyribose nucleic acid (D.N.A.). This structure has novel features which are of considerable biological interest.

A structure for nucleic acid has already been proposed by Pauling and Corey[1]. They kindly made their manuscript available to us in advance of publication. Their model consists of three inter-twined chains, with the phosphates near the fibre axis, and the bases on the outside. In our opinion, this structure is unsatisfactory for two reasons: (1) We believe that the material which gives the X-ray diagrams is the salt, not the free acid. Without the acidic hydrogen atoms it is not clear what forces would hold the structure together, especially as the negatively charged phosphates near the axis will repel each other. (2) Some of the van der Waals distances appear to be too small.

Another three-chain structure has also been suggested by Fraser (in the press). In his model the phosphates are on the outside and the bases on the inside, linked together by hydrogen bonds. This structure as described is rather ill-defined, and for this reason we shall not comment on it.

This figure is purely diagrammatic. The two ribbons symbolize the two phosphate–sugar chains, and the horizontal rods the pairs of bases holding the chains together. The vertical line marks the fibre axis

We wish to put forward a radically different structure for the salt of deoxyribose nucleic acid. This structure has two helical chains each coiled round the same axis (see diagram). We have made the usual chemical assumptions, namely, that each chain consists of phosphate di-ester groups joining β-D-deoxy-ribofuranose residues with 3′,5′ linkages. The two chains (but not their bases) are related by a dyad perpendicular to the fibre axis. Both chains follow right-handed helices, but owing to the dyad the sequences of the atoms in the two chains run in opposite directions. Each chain loosely resembles Furberg's[2] model No. 1; that is, the bases are on the inside of the helix and the phosphates on the outside. The configuration of the sugar and the atoms near it is close to Furberg's 'standard configuration', the sugar being roughly perpendicular to the attached base. There is a residue on each chain every 3·4 A. in the *z*-direction. We have assumed an angle of 36° between adjacent residues in the same chain, so that the structure repeats after 10 residues on each chain, that is, after 34 A. The distance of a phosphorus atom from the fibre axis is 10 A. As the phosphates are on the outside, cations have easy access to them.

The structure is an open one, and its water content is rather high. At lower water contents we would expect the bases to tilt so that the structure could become more compact.

The novel feature of the structure is the manner in which the two chains are held together by the purine and pyrimidine bases. The planes of the bases are perpendicular to the fibre axis. They are joined together in pairs, a single base from one chain being hydrogen-bonded to a single base from the other chain, so that the two lie side by side with identical *z*-co-ordinates. One of the pair must be a purine and the other a pyrimidine for bonding to occur. The hydrogen bonds are made as follows: purine position 1 to pyrimidine position 1; purine position 6 to pyrimidine position 6.

If it is assumed that the bases only occur in the structure in the most plausible tautomeric forms (that is, with the keto rather than the enol configurations) it is found that only specific pairs of bases can bond together. These pairs are: adenine (purine) with thymine (pyrimidine), and guanine (purine) with cytosine (pyrimidine).

In other words, if an adenine forms one member of a pair, on either chain, then on these assumptions the other member must be thymine; similarly for guanine and cytosine. The sequence of bases on a single chain does not appear to be restricted in any way. However, if only specific pairs of bases can be formed, it follows that if the sequence of bases on one chain is given, then the sequence on the other chain is automatically determined.

It has been found experimentally[3,4] that the ratio of the amounts of adenine to thymine, and the ratio of guanine to cytosine, are always very close to unity for deoxyribose nucleic acid.

It is probably impossible to build this structure with a ribose sugar in place of the deoxyribose, as the extra oxygen atom would make too close a van der Waals contact.

The previously published X-ray data[5,6] on deoxy-ribose nucleic acid are insufficient for a rigorous test of our structure. So far as we can tell, it is roughly compatible with the experimental data, but it must be regarded as unproved until it has been checked against more exact results. Some of these are given in the following communications. We were not aware of the details of the results presented there when we devised our structure, which rests mainly though not entirely on published experimental data and stereo-chemical arguments.

It has not escaped our notice that the specific pairing we have postulated immediately suggests a possible copying mechanism for the genetic material.

Full details of the structure, including the conditions assumed in building it, together with a set of co-ordinates for the atoms, will be published elsewhere.

We are much indebted to Dr. Jerry Donohue for constant advice and criticism, especially on inter-atomic distances. We have also been stimulated by a knowledge of the general nature of the unpublished experimental results and ideas of Dr. M. H. F. Wilkins, Dr. R. E. Franklin and their co-workers at

Una excepción...

MOLECULAR STRUCTURE OF NUCLEIC ACIDS

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Watson y Crick (1953)

Índice de Price

Expresa el *porcentaje* (%) de referencias con cinco (5) años de antigüedad o menos, en relación con el *total* de referencias citadas.

Derek John de Solla Price (1922-1983)

La investigación

Objetivos

1. Analizar falsas creencias relacionadas con la desactualización u obsolescencia de la literatura científica, específicamente del área de ciencias sociales y humanidades.

2. Refutar las falsas creencias a partir del análisis de estudios bibliométricos realizados en el campo de las ciencias sociales y las humanidades.

La investigación

Método

Se realizó una investigación de campo mediante una encuesta. El instrumento fue un cuestionario manejado por el investigador, quien se encargó de registrar las respuestas suministradas por los encuestados.

La investigación

Método

En total fueron 150 los consultados: 80 tesistas y 70 tutores de pregrado y postgrado, todos del área de ciencias sociales y humanidades, pertenecientes a 10 instituciones universitarias públicas y privadas de diversas regiones del país.

Resultados

68% de los consultados señalan que las referencias deben tener como máximo cinco años desde su publicación. Un 18% indica que la vigencia debe estar entre 7 y 10 años. El 14% restante de los encuestados no sabe o no responde.

Resultados

Sobre la existencia de una norma o criterio que defina la desactualización de una referencia, el 100% de los encuestados, tanto tesistas como tutores, respondió no saber. Es decir, los consultados desconocen de dónde proviene el tiempo expresado en la respuesta anterior.

Conclusiones

Los resultados obtenidos en la investigación de campo confirman la persistencia de un mito académico referido a falsas creencias en torno a la desactualización u obsolescencia de la literatura científica después de cinco (5) años, específicamente en ciencias sociales y humanidades.

Conclusiones

Como producto del análisis documental se concluye que el tiempo de obsolescencia o desactualización de las referencias citadas es ***relativo***, debido a que depende de varios factores, fundamentalmente de la disciplina o área del conocimiento y del tema objeto de estudio.

Conclusiones

En humanidades y ciencias sociales, campos en los que predomina la literatura clásica, el período de vigencia de las referencias es mucho mayor que en las ciencias naturales, en las que generalmente se utiliza literatura efímera.

Conclusiones

Es totalmente falso que sólo se deben citar referencias con cinco años o menos, a partir de su publicación. No existe ninguna norma o criterio científico que imponga lo anterior.

“Si no conozco una cosa, la investigaré”

Louis Pasteur (1822 – 1895)

G R A C I A S P O R S U A T E N C I Ó N

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