

# **h-index, a misleading value for evaluation of scientist research output**

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Eight years ago, Dr. Hirsch elaborated systems of mathematical equations for elucidation of individual's scientific research output (1). This so called h-index was widely accepted in scientific databases. Actually, it appears to be appropriate number to assess research scientist's impact in the science. However, here we give examples of three slovakian research scientists, working in the same town, under both the area of socialism and capitalism that the use of h-index is not a valid number. (From ethical point of view we cannot give his/her names).

First, a reseach scientist at age of 82 years, who was working in a very small group, largely 1-3 of scientists (A).

Second one, was working in group of 4-6 scientists and at the age of 54 years retired (B).

Third one is 82 years old scientist working in group of 6- or more researchers (C). All three scientists worked in Biomedicine.

h-indexes of A, B, and of C are 31, 12, 21, respectively. (The data were taken from database of Web of Knowledge). From the first glance h-indexes are reasonable. However, if we partitioning they citations/per number of co-workers on their publications, we receive the following numbers: A=1202, B=156, and C=205 (kg-index). Comparing h-indexes, there is a big difference between their impact on the development of science. There are unumerrous numbers of other examples in the Web of Knowledge.

What does it mean? As a law of **conservation** of mater and energy cannot be disrupted by any factors, then a law of **conservation** of spiritual values cannot be disrupted by Hirsch's equations. Further, the examples given above tell us that working in small and/or mediate group is more appropriate than working in larger groups. This fact should be taken into account if grant agencies provide a grant to research scientist. A very bad example is the EU agency as for biomedicine. Grants are given to very large groups of researchers. In the science, the original idea of the hypothesis tested has only one originator. If 30 scientists have 30 hypotheses, then they will not have enough money to pay collaborators.

Concluding, h-index is not valid value for quantification an individual's scientific research output. kg-index is more appropriate, since it does not disrupte a law of conservation of spiritual values.

What Dr. Albert Einstein would say that his h-index=2 and his kg-index is=38?

1. Hirsch JE. An index to quantify an individual's scientific research output. Proc. Natl. Acad. Sci. U S A. 2005;102:16569-16572.