

## Can the extract of *Annona squamosa* cure Type 1 diabetes mellitus?

This is with reference to the article Hypoglycaemic and antidiabetic effect of aqueous extract of leaves of *Annona squamosa* (L.) in experimental animal<sup>1</sup>. Any experimental study on animals should eventually pave the way for its use in humans. In this context the article raises the following doubts.

Alloxan and Streptozotocin induce massive B-cell necrosis, resulting in the lack of production of insulin. This, in turn, causes severe insulin deficiency leading to severe diabetes, almost akin to Type 1 diabetes in humans<sup>2</sup>. Hence the experimentally produced diabetes mellitus (DM) in the study should be nearer to Type 1 and not Type 2 as mentioned in the article.

If oral drugs have to have any action, some B cells have to be present. Are there any methods to know whether any B cells did survive after these drugs were administered?

In Groups C and D of table 1, in the 'No extract' class, referring to the control animals which are also diabetic as they ought to be, why are the blood glucose levels at 3 h given as 92 and 105, which is almost normal?

On the effect of the extract on diabetic rats and rabbits at 350 mg/kg body wt, a fall of 24% in FBG and 37 and 40% in blood glucose at the end of 1 and 2 h of GTT have been shown. This, indeed, is significant. But how did FBG come down? Was the drug given the previous night also?

In the mechanism of action, it is postulated that this water extract might be useful in Type 2 as well as Type 1 diabetes, irrespective of whether the pancreas is partly functional or almost totally destroyed. This cannot happen as no insulin can come out of totally destroyed B cells and no drug can produce insulin in the absence of B cells. If this theory were to

be true, there would be no diabetes as B cells could be regenerated.

The effect of the extract on other modes of glucose balancing by the liver or by peripheral utilization of glucose by the muscles cannot bring down the sugar by as much as 40%. Hence, if at all the extract has any effect, it can only be in Type 2 DM where some functioning B cells are still present and not in Type 1 DM as claimed.

1. Gupta, R. K. *et al.*, *Curr. Sci.*, 2005, **88**, 1244–1254.
2. Lally, F. and Bone, A. J., *Text Book of Diabetes-1*, John Pickup & Gareth Williams, Blackwell Publishing, 2003, 19.1, 3rd edn.

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## School textbooks on science: are they getting adequate attention?

The recent decision by the International Astronomical Union of changing the status of Pluto from planet to 'dwarf planet' and in the process reducing the number of solar planets from nine to eight, has not only grabbed media headlines but has also turned it into a matter of discussion in different circles. Moreover, the designation 'dwarf planet' introduced for the first time has not only been used to identify Pluto but its satellite Charon, along with two more members of the solar system, i.e. Ceres and Eris.

But how does this information reach students? The National Council of Educational Research and Training (NCERT), that publishes textbooks for schools in India, has declared that this latest information will find place in books this year. Hopefully, schools under the Central Board of Secondary Education (CBSE) that use these books, will have the corrected information for their students. But what about the students in schools affiliated to different State Boards where the medium of instruction by and large is one of the regional languages? Will the books they prescribe have the corrected information incorporated? One has reasons to doubt

this, since all books are really not the adopted versions of the NCERT books. And this brings in a few important questions related to school science textbooks, particularly in regional languages.

There are a large number of schools in different parts of India, where education is imparted in regional languages. If one takes a cursory look at the books on science for high school (grades VIII to X) written according to the syllabi of different State Boards, one will invariably find a significant number of errors that have crept into these books. Moreover, a large number of widely taught principles, laws and definitions are presented in a way that is really not consistent, and the wordings vary from book to book causing confusion among the students. For example, the very statements of Newton's laws of motion or that of Ohm's law differ from book to book. The definitions of a number of physical quantities like the boiling point or melting point of a substance or water equivalent or thermal capacity are also given in different wordings in different books. These can easily be done away with the formulation of laws and definitions in some standard

wordings<sup>1</sup> in different regional languages using the help of experts, and publishers may be directed to use these wordings only. The authors can easily show their prowess and originality through explanation of the subjects and other materials contained in the book.

It is not that all NCERT science books are free from errors, but as a government agency the NCERT takes certain visible steps to produce good quality books for students and updates and revises them. However, the same thing cannot be said about other English language science books from private publishers. The concern is more for regional language books, since a larger number of students use them and also they do not have alternate resources within their reach to check the facts stated in their books. Since many of these students pursue higher studies in science and technology, in a way, the science books in regional languages should bear a heavier responsibility.

As such, most of the State Boards, at least theoretically, follow the same procedure of reviewing books before permitting the publishers to bring out the book with a textbook number that bears the