Response:

I welcome Rao's comments in positive spirit. However, I have no option but to completely disagree with his way of interpretation of our work. The interpretation of our work demands that one has to understand at the outset, the mechanism of gene transfer from a wild strain of *Agrobacterium tumefaciens* C-58 to the plant system. Rao's comments seem interesting, as he has pointed out that the presence of nopaline in the C-58-induced callus could be the function of the Ti plasmid of *A. tumefaciens* C-58, which does not essentially require integration of T-DNA with the host genome.

The presence of opine (nopaline) in the transformed plant tissue certainly requires the integration of T-DNA. More importantly, it is necessary to educate ourselves that the T-DNA of *A. tumefaciens* contains the genes for both tumour induction as well as opine biosynthesis, specifically in the case of opine, e.g. nopaline[1,2]. In response to the comments regarding the use of the term 'genetic transformation', there are examples of a large number of papers[3–8] which start with the title 'genetic transformation'. All these research findings used wild strains of either *A. tumefaciens* or *A. rhizogenes* for genetic transformation work. Further, in most of the cases they have used opine (nopaline or mannopine) analysis as an evidence for genetic transformation.

Therefore, there is nothing wrong with the title of our article. Hence the incorporation (integration) of T-DNA into the host genome was not a mere assumption by us (authors), but it is demonstrated by the presence of nopaline in the transformed tissue compared to its absence in the untransformed control callus tissue. Therefore, there is no need to demonstrate it using Southern blot analysis. Thus the evidence for genetic transformation in our work is adequate.

Further, the main objective of our study was to develop an *in vitro* culture system for the production of tannin from *Terminalia chebula*, which is accomplished and is evident by the high growth rate of transformed callus and presence of tannin. Moreover, our report of the susceptibility of *T. chebula* to *Agrobacterium* infection was the first in this plant.

1. Zambryski, P. C., *Annu. Rev. Plant Physiol. Plant. Mol. Biol.*, 1992, **43**, 465–490.
2. Galun, E. and Breiman, A. (eds), In *Transgenic Plants*, Imperial College Press, Singapore, 1997, pp. 13–43.
3. Bajaj, Y. P. S. and Ishimaru, K., In *Biotechnology in Agriculture and Forestry, Transgenic Medicinal Plants* (ed. Bajaj, Y. P. S.), Springer-Verlag, Berlin, 1999, vol. 45, pp. 1–19.
4. Giri, A., Banerjee, S., Ahuja, P. S. and Giri, C. C., *In Vitro Cell Dev. Biol. – Plant*, 1997, **33**, 280–284.
5. Giri, A., Giri, C. C. and Narasu, M. L., In *Plant Genetic Engineering: Improvement of Commercial Plants–II* (eds Jaiwal, P. K. and Singh, R. P.), Sci. Tech. Publishing LLC, Houston, USA, 2003, vol. 4, pp. 23–81.
6. Handa, T., Sujimura, T., Kato, E., Kamoda, H. and Takayenagi, K., *Acta Hortic.*, 1995, **342**, 209–218.
7. Huang, Y., Dinar, A. and Karnosky, F., *In Vitro Cell Dev. Biol. – Plant*, 1991, **27**, 201–207.
8. Stummer, B. E., Smith, S. E. and Langridge, P., *Plant Sci.*, 1995, **111**, 51–62.

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NEP's take on traditional knowledge and biodiversity

One cannot but help pinpoint the perceptible lack of 'action-strategies' that the National Environment Policy (NEP), 2006 takes on biodiversity, traditional knowledge and natural heritage (Section 5.2.4). Given India's position in the globe as a biodiversity hotspot, it is apparent that areas of endemism need to be protected. There is more to appreciating the value of indigenous knowledge of our nation than projecting it from an anthropocentric point of view (like 'tap this resource base for the benefits of the country as a whole'). The measures stated by NEP 2006 are: enhance *ex situ* conservation, selective valuation of biodiversity, harmonization of Patent Act with the Biodiversity Conservation Act, and access and benefit-sharing systems.

A national policy's stand on issues of grave importance like traditional knowledge cannot be as non-committal as this. It is not just protection of traditional knowledge that a government should seek; there must also be incentives to preserve the knowledge by documentation. If this is not feasible, given many communities' reluctance to share their knowledge (which is a part of their spiritual and cultural repertoire and hence unshared), steps must be taken to safeguard their knowledge from appropriation. In a few cases, efforts must be made to develop and improve this knowledge system, eventually removing the myth of 'static traditional knowledge'. These and other issues like genetic engineering, seed varieties of farmers and benefit-sharing mechanisms do not find place in NEP 2006. Additionally, legal means to protect/preserve traditional knowledge and fight against misappropriation must have been given prominence in the policy.

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