Table 1. Differences between *Begonia roxburghii* A.DC and *B. tessaricarpa* C. B. Clarke

Begonia roxburghii A.DC	*Begonia tessaricarpa* C. B. Clarke
Caulescent	Acaulescent
Herbs or sub-shrub, 50–150 cm high	Herbs, 15–30 cm high
Stem and petioles highly succulent	Stem less succulent
Leaves 15–23 × 12–20 cm	Leaves 7.5–13.5 × 3.7–7.8 cm
Inflorescence axilliary	Inflorescence radical
Peduncle 0.5–1.2 cm long	Peduncle 10–13.5 cm long
Mature fruit pendulous	Mature fruit stout, erect on the scape
Fruit highly fleshy, 2.1–2.5 cm in dia	Fruit less fleshy, 1.0–1.5 cm in dia

lunate, persistent. Capsules sub-pyramidal, 1.0–1.5 cm in dia, four-celled, fleshy with four-tapering end, indehiscent. Seeds ellipsoid, brown.

Flowering and fruiting: July–October.

Specimens examined: K. Ambrish 17304 (ARUN); Amad 107306 (ASSAM).

Note: Clarke in his original description of the plant doubted it to be stunted example of *Begonia roxburghii* A.DC. However, critical examination of both the species showed striking differences (Table 1).

Apart from Upper Subansiri District, the plant has also been collected from Changlang District (Namdapha National Park), Arunachal Pradesh. It shows that this species is still surviving in a few pockets of Arunachal Pradesh. It is found growing in damp, rocky crevices in association with *Selaginella*, *Funaria*, *Polytrichum*, *Impatiens*, *Alocasia*, etc. The species is endemic to Arunachal Pradesh[6]. It is in danger of extinction in the near future because of destruction of the habitat due to various biotic and abiotic factors.

The plant is eaten raw as well as cooked for its delicious, sour taste. It is also consumed as 'chatni' by the Tagin tribe. The juice of the plant is used as leech guard by local tribes. Beautiful flowers and attractive leaves also suggest the horticultural potential of the plant.

The Botanical Survey of India, Eastern Circle, Shillong maintains many rare and endemic plants of Northeast India in the Experimental Botanical Garden, Barapani as part of its Germplasm Conservation Programme. Among the plants, about 25 species of *Begonia* are also under cultivation, including *Begonia tessaricarpa*. However, adequate measures should be taken towards protection of the habitat for natural growth of the still surviving population of this species along with its *ex situ* conservation. Mass propagation using modern techniques like tissue culture is also suggested.

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ACKNOWLEDGEMENTS. We thank the Director, Botanical Survey of India, Kolkata for providing necessary facilities. Thanks are also due to the Joint Director, BSI, AFS, Itanagar and the Deputy Director, BSI, EC, Shillong for invaluable suggestions.

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Compulsory licensing – To what extent is it practicable?

Right of access to affordable medicines by people in developing and underdeveloped countries is recognized by WTO in its Doha declaration; further it is reiterated in its 30 August decision. Compulsory licensing is one of the aspects of the TRIPS agreement that allows developing and underdeveloped countries to use flexibilities accorded under the agreement. TRIPS does not use the word compulsory licensing, instead it refers to it as 'Other Use Without Authorization of the Right Holder'[1]. Use of compulsory licensing is of utmost importance for pharmaceutical products as medicines are not available to the poorer section in various countries due to patent protection enjoyed by MNCs. This is especially true in case of anti-AIDS drugs. The provision of compulsory licensing allows any national government or third party to avail of the flexibility in certain circumstances, such as in the case of national emergency to deal with public health emergency or public non-commercial use by the patent holder, as laid down in the TRIPS agreement. It is a common fallacy that a country can issue compulsory license only in the case of an emergency, but the Doha declaration on public health confirms that countries are free to determine the grounds for issuing compulsory license[2]. To use this flexibility of compulsory license, the proposed user of this flexibility has to make necessary efforts to avail voluntary license from the patent holder on reasonable commercial terms. Here again, ambiguity arises as TRIPS uses words like 'reasonable commercial terms'. Nothing is specified or clarified as to what constitutes 'reasonable commercial terms'. But in case of 'national emergency', 'public non-commercial use' or 'anti-competitive practices', there is no need to try for voluntary license first[2]. Although compulsory licensing provides member countries to use this flexibility, it is seen that hardly any country has implemented this provision or issued any compulsory license to any third party since the implementation of the TRIPS agreement. The reason is due to the tedious and cumbersome procedure to obtain compulsory license. It is estimated that if a country wants to avail the flexibility of compulsory license, the procedure to obtain the license would take nearly three years due to judicial and administrative procedures

that need to be followed. Further, compulsory license also hindered the procedure as this provision was meant to be used only to meet domestic demand of the country and not for export or import. However, this provision was ratified in the Doha ministerial meeting in November 2001, which is generally referred to as Paragraph 6 decision, for member countries with insufficient or no manufacturing capabilities[3]. This development, though laudable, has far less importance as the process is a burden for the member country with insufficient or no manufacturing capacity, as any member country needs to invest sufficient amount of money and time. It is evident, from the past, that no member country has ever used this flexibility so far. Certain countries threatened to issue compulsory license to negotiate prices of drugs for government procurement, but did not issue compulsory license as they felt the threat of trade sanctions from certain advanced countries. This provision of compulsory license is just to 'fool around' with socially and economically weaker countries. As majority of member countries are developing or underdeveloped, it is quite possible that they may not be able to use the flexibilities available to them. Thus, issue of compulsory licensing has far-reaching implications on certain developing and underdeveloped countries. Though WTO has tried to facilitate over a period of time to use the flexibility of compulsory license, lot more proactive steps need to be taken and member countries should be given more flexibilities for issuing compulsory licensing with least limitations, so as to protect public health and make required medicines available at an affordable price.

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Human tumour tissue bank: an essential requirement for Indian tumour biology research

Molecular, biochemical, proteomic, kinetic, statistical and bioinformatics studies on tumour or cancer-related diseases require direct human samples. All profiling techniques like DNA microarray, tissue microarray, two-dimensional gel electrophoresis and other modern techniques require different parts of the human tumour tissue (HTT)[1]. The techniques demanded by these studies are mostly available in CSIR, DST, DBT and ICMR research institutes and not in surgical hospitals, central and state universities or district general hospitals. For advance research on tumour biology in India, there is a need for easy availability of HTT. For this, human tumour tissue bank (HTTB) is now an essential requirement. The problem of unavailability of HTT is usually faced by basic and applied research scientists. This is a big hindrance for scientists who work on basic tumour research in India. In the United States, there are government organizations to provide a national facility for greater access to HTT to scientists involved in cancer research. On the initiative of the National Cancer Institute, a cooperative human tissue network was established in USA[2] in 1987. This network is responsible for prospective procurement, preservation and distribution to institutional review board-approved investigators[3]. The cancer therapeutic evaluation[4] program includes several clinical trial cooperative organizations, which are also facilated by the National Cancer Institute (www.nih.ohrp.gov).

Recently, an International Society of Biological and Environmental Repositories (ISBER, www.isber.org) has been established to assist in the development of standards in methodology, management and education. ISBER is a great informational resource for groups involved in procurement systems and repositories. Samples can be stored as snap-freeze, to keep them fresh or stabilize the tissues in fixative. At the annual meeting of the ISBER (2002), it was reported that whole cells maintained at –132°C or lower, exhibited the best long-term viability with minimal or no enzymatic degradation. India should also have a proper cooperative committee for accessibility of this stored specimen. This committee could recommend and recognize needful investigators. All stored samples and their related documents should be stored in a national facility, from where any recognized researcher can access these specimen and data.

Considerable efforts are now being made internationally towards developing standardized methods of tissue procurement and processing. Biotechnology has made great strides to facilitate rapid unravelling of disease etiology. These have finally led to the development of better therapeutic targets. India should also take some effort on this front. This is a critical issue that needs effort through joint cooperation between government and private research centres and surgical hospitals.

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