Need for geographical indication tag to Indian seaweeds: case of industrially important red seaweed *Gracilaria dura* (C. Agardh) J. Agardh

India, being a member of the World Trade Organization (WTO), enacted the geographical indications (GIs) of Goods Act (both Protection and Registration) in 1999, which came into force with effect from 15 September 2003. WTO Agreement on Trade-Related Aspects of Intellectual Property Rights under Article 22(1) defines GIs as 'indications which identify a good as originating in the territory of a member, or a region or a locality in that territory, where a given quality, reputation or characteristic of the good is essentially attributable to its geographic origin'[1]. Darjeeling Tea was the first to get a GI tag in 2004. According to the data available from Geographical Indications Registry, there are about 420 GIs registered under different categories, namely agriculture, handicraft, foodstuff and manufactured goods[2]. There are several examples, like 'Mithila Makhana', or medicinal plants having enormous applications in Ayurveda; when GI is tagged, the move is expected to help growers get the maximum price for their premium produce.

Seaweeds, a marine renewable resource, have recently generated enormous interest nationally and internationally due to their utility in commodity products of everyday use. Over 10,000 seaweed species are reported worldwide, of which about 1,000 (10%) are recorded from Indian shores[3]. The seaweeds from Indian waters, primarily collected from their natural habitat, are used to produce agar and alginates by domestic industries[4]. About 125 seaweed taxa have a restricted range of distribution and have never been reported outside the geographical boundaries of our country[5]. Recently, cultivation of red agar yielding seaweed *Gracilaria dura* has been found to be very successful along the Gujarat coast[6]. The farmed seaweed feedstock has been reported to yield 20–25% agar on a dry weight basis with a gel strength of >1900 g cm^{-2} (1% gel) having a gelling temperature of 35°C (ref. 7). Considering opportunities for economic empowerment of the coastal community, the National Fisheries Board, Hyderabad, imparted hands-on cultivation training to 165 fishermen at Simar and Rajapara along the Gujarat coast (Figure 1).

But due to the low cost of agarophyte feedstock, commercial farming has been discontinued by these seaweed growers. Currently, the agar requirement for our country is 400 tonnes per $year^{-1}$; against this, only ca. 300 tonnes of food-grade and ca. 90 tonnes of bacteriological-grade agar is being produced, largely derived from wild augmentation of *Gracilaria edulis* and *Gelidiella acerosa* respectively[8]. The agarophyte trade based on seaweed landings is worth ₹ 20 million $year^{-1}$. Further, to cater to the entire domestic agar demand, 4000 tonnes of dry feedstock is needed, and it can only be met through commercial farming. The prospect of commercial farming of this species in Indian waters is very high. Besides, in India, this species is also reported from Mediterranean waters, e.g. Gulf of Naples, but the quality of agar obtained from the feedstock of Mediterranean waters was considerably low (250–280 g cm^{-2}), with diminutive industrial utility[9]. Further, the experimental cultivation of this species along the Mandapam coast, Tamil Nadu, showed fewer commercial prospects than Gujarat[10]. Thus, this specific strain of *G. dura* with restricted distribution in and around Veraval, Gujarat, with the production of high industrial potential, distinguished it on the basis of its unique intrinsic attributes useful for aquaculture and product. It may be noted that there are 36 fruit crops, 11 vegetable crops, 8 spices and plantation crops, 5 flowers and 2 aromatic plants under horticulture practice that have already been assigned GI tags in our country[1]. Nevertheless, such an initiative will also enable due recognition of the unique seaweed biodiversity of our coastal waters. This calls for pushing this case for obtaining GI tag; further efforts should be made by quasi-public institutions. Such a move would help fishermen continue farming this seaweed, facilitate better returns and higher profit margins, and improve their livelihood.

Figure 1. Fishers harvesting of farmed feedstock of *Gracilaria dura* at Simar, Gujarat.

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