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New report on regeneration via microphylls of *Huperzia hilliana* (Nessel) Holub

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Short Communication

Huperzia belongs to the family Huperziaceae, which is about 415 species found in all over the world(Hassler and Brinan,2006), and out of them, 21 species are found in India(Hassler and Brinan,2006; Dixit,1984; Dixit,1987). Hup A is used for treatment of Alzheimer's disease (Tang,1996), which is isolated and identified from *H. serrate* (Liu *et al*.,1986a; Liu *et al*.,1986b). Recently, over-exploitation and wild resources of *Huperzia* species were large amounts of consumed (Ma *et al*.,2006). Shortage of the wild species has been impossible to make large-scale production of *Huperzia* species (Wang *et al*.,2011). Several scientists has been studied by *Huperzia* species very slow growing and normally requiring fifteen to twenty years needed to life cycle (Ma and Gang,2004; Ma et al.,2006; Singh, Singh,2010).

Huperzia hilliana (Nessel) Holub is endangered category from Western Ghats region, South India (Benniamin *et al*.,2008). The present field study of reproductive biology and regeneration of *H. hilliana* was month wise observed by three year period from 2009-2012. *Huperzia hilliana* was lithophyte herbs, growing on humus mass layer in the forest, usually in shady and humid environments (Fig. A). The observed results that obtained, first time reported the microphylls *via* regeneration of *Huperzia hilliana* in natural conditions (Fig. B, C& D). Recently, Maridass *et al*.,(2011) reported that fast growth of *H. hilliana* was influenced by main environmental factor of rainfall. Most of the Huperzia species had the ability to reproduce through bulbils, which may be reflect due to adaptation of environmental factors (Page,1979; Neyland,1986; Chuter *et al*., 2008). Life cycle of *Huperzia* species spores germination take duration of 2-5years to develop into sporophyte generation (Bruchmann,1910; Whittier, Storchova, 2007). Similar species of *H. serrata* was grow very slowly, normally requiring 15-20 years of growth from spore germination to maturity (Ma,2006). Recent studies, vegetative propagation methods successfully established in 1 to 2cm of rhizome attach with root *via* regeneration of new populations (Maridass *et al*.,2011; American Horticultural Society,1999), and also *H. serrata* was successfully established in cutting method(Sheng et al.,2000). The conclusion of the present report, *H .hilliana* microphylls via reproduced in new generation was formed and which is spread on new locations of top mass layer in rocks influenced by heavy rainfall (Fig. A) and also may be helpful to natural resource protection, cultivation of microphylls via *H. hilliana* and lab studies recommended in explants of microphylls *via H. hilliana* should be successfully established in micropropagation and multiplication of plant tissue culture technology.

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Fig.A: Natural growing habitate of *H. hilliana;* Fig.B,C,D: Microphylls via regeneration of *H.hilliana*

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