EFFECT OF SELECTED PLANT GROWTH REGULATORS AND ABIOTIC FACTORS ON MICROPROPAGATION OF PLANTLETS FROM SHOOT BUD CULTURES OF *BOESENBERGIA ROTUNDA* (L.) MANSF; A VALUABLE MEDICINAL PLANTS.

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1. Letter of Report Submission

UNIVERSITI TEKNOLOGI MARA

Ruj. Kami 600-RMI/ST/DANA 5/3/Dst (473/2011)
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Puan,

PENERIMAAN BORANG TAMAT PROJEK PENYELIDIKAN (DANA KECEMERLANGAN)
TAJUK PROJEK : ***EFFECT OF SELECTED PLANT GROWTH REGULATORS AND ABIOTIC FACTORS ON MICROPROPAGATION OF PLANTLETS FROM SHOOT BUD CULTURES OF BOESENBERGIA ROTUNDA(L) MANSF:A VALUABLE MEDICINAL PLANTS.***

Dengan segala hormatnya, perkara diatas adalah dirujuk.

2. Adalah dimaklumkan, Institut Pengurusan Penyelidikan (RMI) telah menerima satu (1) salinan asal borang tamat projek bertajuk seperti di atas daripada pihak puan. Sehubungan itu, projek penyelidikan pihak puan telah didaftarkan sebagai **TAMAT.**

3. Pihak puan perlu menghantar laporan akhir penyelidikan dalam bentuk satu (1) salinan cakera padat (CD) kepada RMI dalam tempoh tiga (3) bulan dari tarikh surat dikeluarkan.

4. Bagi memuktamadkan dan melaksanakan prosedur penutupan akaun, pihak puan diberi tempoh **sehingga 30 Jun 2013**. Garis panduan tersebut boleh dilayari di www.rmi.uitm.edu.my atau menghubungi Unit Pemantauan Penyelidikan RMI di talian 03-5544 3285/2098/2559.

5. Selaras dengan usaha UiTM untuk mencemerlangkan universiti dari aspek penyelidikan, pihak puan diminta berusaha untuk memohon geran penyelidikan baru.

Sekian, terima kasih.

Yang benar,

PROFESOR MADYA DR. MOHAMAD NIDZAM RAHMAT
Ketua Penyelidikan (Sains Sosial & Pemantauan Penyelidikan)

Disertakan

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5. Report

5.1 Proposed Executive Summary

Boesenbergia rotunda is a herbaceous plant belonging to family Zingiberaceae and the pharmacological importance of this plant is mainly due to the presence of flavanoids, essential oil and chalcones (Jaipetch et al., 1982; Pandji et al., 1993; Trakoontivakorn et al., 2001). Recently, 4-hydroxypanduratin A and panduratin A, which isolated from the rhizome of *B. rotunda* were found to show high inhibitory activity towards dengue-2 virus protease at 120 ppm (Tan et al., 2006). Conventionally *Boesenbergia rotunda* is propagated by dividing into small clumps and planted in the soil, however this process regularly results in fungal diseases that can control the quality of medicinal values of the plants. In view of the problem of the fungal diseases in the field, *in vitro* culture technique can be a wonderful alternative technique for mass propagation of disease free plant material for *B. rotunda*. *In vitro* propagation of the Zingiberaceae family has already been reported, for example *Alpinia galanga* (Inden & Asahira 1988) and *Zingiber officinale* (Hosoki & Sagawa 1977; Pillai & Kumar 1982; Inden & Asahira 1988; Bhagyalakshmi & Singh 1988; Ikeda & Tanabe 1989). However, to date there are scarce report on the rapid micropropagation of *B. rotunda*, which will be discover in this study. The aim of study is to establish a micropropagation protocol that can be applied to *B. Rotunda* by focusing at the effect of selected plant growth regulators (BAP, Zeatin, 2,4-D and IAA) and effect of divided or undivided shoot buds on proliferation rate of this species. The shoot explants of the *in vitro* plantlets were cultured in solid medium supplemented with selected plant growth regulators. Shoot bud will be cut into half and subculture for 3 times to observe the effect of the undivided and divided shoots on proliferation rate of the *B. rotunda*. An average of shoots produce from the experiment will be analysed using student t test.

5.2 Enhanced Executive Summary

Abstract of the research

A successful protocol was developed for mass propagation of *Boesenbergia rotunda* (L.) mansf. Kulturpfl., an important medicinal plant. Numerous shoots were induced from young shoot bud of *B. rotunda* mature rhizome on Murashige and Skoog (1962) medium supplemented with 30.0 g L^{-1} sucrose, 2.0 g L^{-1} gelrite, different concentrations of 6-benzylaminopurine (BAP) and α-naphtaleneacetic acid (NAA). Plant medium supplemented with different concentrations of BAP alone or aided with NAA produced varying degree of multiple shoots. A supplementation of 2.0 mg L^{-1} BAP + 0.5 mg L^{-1} NAA gave the best result. 90% of the inoculated explants induced multiple shoots within 10-14 days of inoculation with 5 maximum numbers of shoots per explants. The number of multiple shoots was low during early subculture, increase until 3rd subculture and slightly decrease at 4th subculture. Rooting was spontaneous in almost all of the treatments after 10-14 days of culture. Micropropagated plantlets were successfully acclimatized.