

## Antioxidant and Cytotoxic Activities of Dichloromethane Extracts of *Marasmius* Species

T. Mohamed Nor, N. Abdullah and N. Zainal Abidin.

*Institute of Biological Sciences, Faculty of Science, University of Malaya,  
50603 Kuala Lumpur, Malaysia.*

There is a paucity of information on the pharmacological properties of *Marasmius* spp. Therefore the present study was undertaken to evaluate the cytotoxic and antioxidant activities of *Marasmius* spp. consisting of *M. ruforotula* (KUM 20111, KUM 20112), *M. selangorensis* (KUM 20181), *M. guyanensis* (KUM 20044), *Marasmius* sp. (KUM 20067), *Marasmius* sp. (KUM 20222), *Marasmius* sp. (KUM 20117), *Marasmius* sp. (KUM 20160). Crude dichloromethane extracts were prepared from the mycelial biomass grown in liquid GYMP using a soxhlet extractor system. The cytotoxic effect of the *Marasmius* spp. extracts were screened using Neutral Red assay (NR), an *in vitro* assay system of growth inhibition against cancer cell lines, namely human mouth epidermal carcinoma cell line (KB), human epidermal carcinoma of cervix cell line (CaSki), human colon cancer cell line (HT 29), human intestinal colon cancer cell line (HCT 119), human colorectal cancer cell line (Skov 3), human breast cancer cell line (MCF 7) and also on human fibroblast cell (normal cell) (MRC5). At 20 µg/ml, crude dichloromethane extract of *M. guyanensis* (KUM 20044) showed the highest cytotoxic activity of 37.7% ± 1.82 against Skov 3. Crude extracts of *Marasmius* sp. (KUM 20222) exhibited the highest inhibition against MCF 7 and HT 29 cancer cells at 20 µg/ml. For HCT 119 cells, crude extracts of *M. ruforotula* (KUM 20111, KUM 20112) and *M. selangorensis* (KUM 20181) gave the highest cytotoxic effect. Similarly, *M. ruforotula* (KUM 20111) exhibited the highest inhibition of 47.2% ± 2.04 towards KB cells. Only *Marasmius* sp. (KUM 20067) showed the highest inhibition of 32.0% ± 2.59 against CaSki cells. The antioxidant potency was investigated by employing established *in vitro* systems such as 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging, reducing power and metal chelating activity. The antioxidant activities were compared to standard antioxidants such as butylated hydroxyanisole (BHA), L-ascorbic acid and Ethylenediaminetetraacetic acid (EDTA). The extracts exhibited moderate DPPH radicals scavenging abilities at 70 mg/ml. With regard to EC<sub>50</sub> values of scavenging abilities on DPPH radicals, the effectiveness was in descending order: Ascorbic acid, BHA, *Marasmius* sp. (KUM 20160), *M. guyanensis* (KUM 20044), *Marasmius* sp. (KUM 20222), *Marasmius*

sp. (KUM 20117), *M. ruforotula* (KUM 20112), *M. ruforotula* (KUM 20111), *M. selangorensis* (KUM 20181), *Marasmius* sp. (KUM 20067). Based on the reducing power assay, *M. selangorensis* (KUM 20181) showed excellent reducing power of  $1.9 \pm 0.01$  at 20 mg/ml. At 5 mg/ml, chelating effects on ferrous ions were  $36.4\% \pm 0.002$  for *M. selangorensis* (KUM 20181).