

ID 57

**Extending shelf-life of *Trichoderma viride* pers. broth formula using different parts of tamarind, *Tamarindus indica* L. to scale-up commercial production**

**S. Vaithehi\*, K. Pakeerathan and G. Mikunthan**

Department of Agricultural Biology, Faculty of Agriculture, University of Jaffna, Ariviyal Nagar, Kilinochchi, Sri Lanka.

**Abstract**

*Trichoderma viride* is a promising bio control agent for various plant pathogens in sustainable agriculture. It can be multiplied in liquid and solid media, but liquid fermentation has a higher reproductive capacity than solid-state fermentation. High cost of substrates is one the major problems in scaling up of its commercial production. Early studies revealed that raw tamarind pulp alone supported the growth of *T. viride* however to maximize the availability of raw materials the potential of the extracts of seed kernel, leaf and fruit shell were also evaluated. Dissolving 10g in 100mL of distilled water served the base substrate to standardize the conidial production. The highest conidia were recorded 7 DAI in pulp extract ( $2.83 \times 10^8$  conidia/ml) followed by seed kernel ( $1.90 \times 10^8$ ), leaf ( $1.73 \times 10^8$ ) and fruit shell ( $1.64 \times 10^8$ ). These results revealed that pulp extract is a good source of medium for *T. viride* mass production rather than other tested extracts. Conidial production was obtained as high as  $28.627 \times 10^8$  conidia/mL at 20g pulp dissolved in 100mL of distilled water at 3 WAI. The concentration ranging from 5 to 25g pulp per 100mL distilled water arrived the optimum conidial production at 3 WAI. The production of conidia was stabilized in standardized tamarind pulp extract as high as  $61.68 \times 10^8$  conidia/ml for 25 g/100mL for 8 weeks. The results revealed for extending the shelf-life of broth was as high as  $82.5 \times 10^8$  conidia/ml for 30-gauge polythene bag compared to materials. In the 30-gauge polythene bag at the concentration of 25g/100mL was significantly increased the viable spore production when compared with other materials tested. Seed kernel and fruit pulp extracts at the ratio of 3:1 on a volumetric basis was significantly increased the conidiation as  $4.832 \times 10^9$  conidia/mL. Finally, the findings reveal that adjusting the concentration of the Tamarind pulp would yield the highest conidial production with an increased shelf life more than 2 months.

**Key words:** Conidia, Liquid formulation, Shelf life, *Tamarindus indica*, *Trichoderma viride*

**\*Corresponding Author:** [vaithehi07siva@gmail.com](mailto:vaithehi07siva@gmail.com)