



## Research Article

## DO CULINARY MUSHROOMS HAVE FIBRINOLYTIC ACTIVITIES?

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## ABSTRACT

Recently, many culinary mushrooms have become attractive sources of biologically but non-pharmacological activities including immune modulating activities. In this study, the fibrinolytic activities of freeze-dried basidiocarps of ten edible mushrooms were determined using a qualitative fibrin plate assay and a quantitative enzyme assay using spectrophotometric method. Further, the crude extracts of all the ten mushrooms were subjected to an aqueous two-phase system (ATPS) to recover the fibrinolytic enzymes. The crude extracts and ATPS extracts of *Lentinula edodes* showed the highest fibrinolytic activity of 48.06 U/mg and 54.28 U/mg, respectively assessed via the Folin-spectrophotometric method. The recovery of fibrinolytic enzymes from *L. edodes* was the highest and the fibrinolytic enzymes were further analysed through gel electrophoresis study. A 50 kDa sized fibrinolytic enzyme from *L. edodes* was revealed by sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE). **Biomed Rev 2017; 28:91-99.**

**Keywords:** edible mushroom, fibrinolytic enzyme, *Lentinula edodes*, aqueous two-phase system

## INTRODUCTION

Fibrinolytic activity is the process of dissolving the fibrin in blood clots by proteolytic enzymes such as nattokinase, streptokinase or urokinase (1). Fibrin clot formation and fibrinolysis are equilibrium processes in biological systems. However, accumulation of fibrin clot in blood vessels causes thrombosis and leads to myocardial infarction or other heart diseases. These conditions are the prominent causes of death all over the world (2). Plasminogen activators such as a tissue type plasminogen activator, the urokinase type plasminogen activator, and the bacterial plasminogen activator are well-known fibrinolytic agents used for clinical and medicinal applica-

tions. However, excessive use of these agents results in undesirable side effects like internal haemorrhage and allergic reactions, limitations in specificity towards fibrin and also these drugs are costly (3). Hence, search for fibrinolytic agents from another natural source continues. The fibrinolytic agents extracted from microbial sources are more favourable due to the enormous diversity and its ease in industrial production (4). Medicinal and edible/culinary mushrooms may be the alternative sources for novel fibrinolytic enzymes (5). The edible mushrooms constitute part of the human diet for its traditionally recognised valuable sources of nutrients (6-8). The edible mushrooms also play an important role in improving human

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