

TITLE: ANTIOXIDANT ACTIVITY AND TOTAL PHENOLIC COMPOUNDS OF EXTRACT FROM PIGMENT-PRODUCING FILAMENTOUS FUNGI

AUTHORS: TAVARES, D.G.¹; BARBOSA, B.V.L.¹; SOUZA, P.N.C.²; DUARTE, W.F.¹; CARDOSO, P.G.¹

INSTITUTION: ¹UNIVERSIDADE FEDERAL DE LAVRAS, LAVRAS, MG (AV. DR. SYLVIO MENICUCCI, 1001, KENNEDY, LAVRAS - MG, BRAZIL)

²UNIVERSIDADE FEDERAL DOS VALES DO JEQUITINHONHA E MUCURI, JANAÚBA, MG (AV. MANUEL BANDEIRA, 460, VEREDAS, JANAÚBA – MG, BRAZIL)

ABSTRACT:

Among the secondary metabolites of filamentous fungi, pigments may present bioactive properties as antioxidant activity, and may be used in the food, cosmetic and pharmaceutical industries. In this context, the objective of this work was to evaluate the antioxidant activity and determine the content of total phenolic compounds of extract obtained from pigment-producing filamentous fungi. The fungi used are part of the collection of the Laboratório de Bioprospecção e Genética de Fungos Filamentosos (Biogen) from the Universidade Federal de Lavras, Brazil. The fungi *Aspergillus keveii* (CML 2968), *Aspergillus sydowii* (CML 2967), *Penicillium chermesinum* (CML 2966), *Penicillium flavigenum* (CML 2965), *Fusarium* sp. (CML 2969), *Lecanicillium aphanocladii* (CML 2970) and *Epicoccum nigrum* (CML 2971) were isolated from caves and deposited in the Coleção Micológica de Lavras (CML) from the Phytopathology department from the Universidade Federal de Lavras, Brazil. The fungi were grown in 1 L of PD broth (200 g L⁻¹ potato; 20 g L⁻¹ glucose) and the cultures were filtered and extracted twice by liquid-liquid partition with volume 0.5 ethyl acetate (EtOAc). The extracts were concentrated in a rotary evaporator. The antioxidant activity was evaluated using the free radical scavenging methods DPPH and ABTS^{•+} and the β-carotene-linoleic acid system. The content of total phenolic compounds was determined by the Folin-Ciocalteu method. The extract of the fungus *P. flavigenum* (CML 2965) exhibited the highest antioxidant activity in all used methods and the results were compared with the activity of the commercial antioxidant Trolox. In the DPPH assay *P. flavigenum* (CML 2965) showed 98.22 % inhibition of this radical, and this activity was greater than Trolox activity of 95.72 %. The percent inhibition of the ABTS^{•+} radical by Trolox was 47.09% and the extract of *P. flavigenum* (CML 2965) was 29.50%. Moreover, the percentage of protection against bleaching β- carotene was 72.23% and Trolox 82.62%. The content of total phenolic compounds of extract of *P. flavigenum* (CML 2965) was 201.43 mg of GAE/g of extract. The results indicate that the high phenolic content of the extract from *P. flavigenum* (CML 2965) may also have contributed to the antioxidant capacity. Therefore, this fungus shows biotechnological potential since the crude extract has high antioxidant activity and total phenolic compounds.

Keywords: secondary metabolites, antioxidant potential, phenolic compounds, dye

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