

# Antioxidant activity of endophytic fungi isolated from

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**What are the antioxidant activities of endophytes?** Endophytic fungi can produce secondary antioxidant metabolites that block free radical cascade. For the last few years, these fungi have been studied for their biological activities, such as antimicrobial, anticancer, antidiabetic, antiviral etc.

**What are endophytic bacteria isolated from?** Endophytic bacteria can be defined as those that can be isolated from healthy, superficially disinfected plant tissues and do not cause any damage to the host plant (15, 17).

**How are endophytic fungi identified and isolated?** The identification of endophytic fungi was based on molecular and morphological analysis. The molecular identification was carried out using the internal transcript spacer regions (ITS1 and ITS4) and the intervening 5.8S rRNA region sequencing.

**What is the antioxidant activity of fungal extracts?** The FRAP method confirmed the antioxidant potential of the fungal extracts. The presence of phenolic compounds and flavonoids in the active extracts was confirmed using TLC. These results indicate that two of the fungi isolated from *A. chica* exhibit significant antimicrobial and antioxidant potential.

**Which compounds are responsible for antioxidant activity?** The cells use a series of antioxidant compounds or free radical scavengers such as vitamin E, vitamin C, carotenes, ferritin, ceruloplasmin, selenium, reduced glutathione (GSH), manganese, ubiquinone, zinc, flavonoids, coenzyme Q, melatonin, bilirubin, taurine, and cysteine.

**What is antioxidant activity in plants?** In plants, phenolics can act as antioxidants by donating electrons to guaiacol-type peroxidases for the detoxification of H<sub>2</sub>O<sub>2</sub> produced under stress conditions 36. Phenolics also provide protection against UV radiation through their potent radical scavenging ability.

**How do you isolate endophytes?** Procedure for sample preparation and endophyte isolation. The desired plant sample is being collected, thoroughly sterilized with water and ethanol and then fragmentized into small pieces. Fragments of the plant tissue are plated on growth media suitable for bacteria/fungi and incubated until colonies appear.

**What is the biological activity of endophytic fungi?** The studies have revealed the ability of endophytic fungi for producing many secondary metabolites such as phenols, quinones, xanthenes, isocoumarins, terpenoids, alkaloids, and steroids that work as anti-cancer, anti-viral, anti-bacterial, insecticidal, anti-inflammatory, anti-fungal, anti-diabetic, anti-oxidant, and ...

**What is the antimicrobial activity of endophytic fungi?** Antibacterial activity of endophytic fungi isolated from leaves of *Indigofera suffruticosa*. The strains *N. sphaerica* (URM-6060) and *Pestalotiopsis maculans* (URM-6061) showed the best action, and no significant differences ( $p > 0.05$ ) were observed between their IDZ against most of the tested pathogens (except to *E.*

**What are the most common endophytic fungi?** The genera *Aspergillus* and *Penicillium* stand out as the most prevalent species of endophytic fungi. Filamentous fungi, such as these are responsible for the production of 45% of known microbial metabolites.

**What is the best media for endophytic fungi?** Abstract. Medium for the growth of endophytic fungi generally uses Potato Dextrose Agar media, but because the price is expensive, it is necessary to find materials for alternative media from organic materials that are easy to obtain and inexpensive.

**Do all plants have endophytic fungi?** Endophytic fungi appear to be ubiquitous; indeed, no study has yet shown the existence of a plant species without endophytes.

**What is the most potent antioxidant activity?** Glutathione is often called the “master antioxidant” for good reasons: it is the most potent antioxidant that our bodies make! Through its antioxidant actions, glutathione has been shown to beneficially affect many systems in the body.

**How do you determine antioxidant activity?**

**What is antioxidant activity of bacteria?** The metabolic activities of probiotic bacteria may have an indicated antioxidant effect by scavenging oxidizing compounds or even preventing their formation in the intestine. The production of bioactive peptides has been recognized as an effective way of antioxidant activity in food containing probiotic bacteria.

**What type of molecule is typically responsible for antioxidant activity?** These free radical scavenging reactions need the antioxidant to donate an electron or an active hydrogen atom such as one in reactive hydroxyl group. Generally, antioxidants that are molecules bearing active hydroxyl groups, such as vitamins E and C, polyphenol and flavonol compounds, are potent radical scavengers.

**Which chemicals are used for antioxidant activity?**

**What substances have antioxidant activity?** Sources of antioxidants They are most abundant in fruits and vegetables, as well as other foods including nuts, wholegrains and some meats, poultry and fish. Good sources of specific antioxidants include: allium sulphur compounds – leeks, onions and garlic. anthocyanins – eggplant, grapes and berries.

**What is the Orac method for antioxidant activity?** The Oxygen Radical Absorbance Capacity (ORAC) assay is a method that measures the antioxidant capacity of a substance. The ORAC assay measures a fluorescent signal from a probe that is quenched in the presence of Reactive Oxygen Species (ROS).

**How to extract antioxidants from plants?** To obtain antioxidants from plants in an energy-efficient and economically sustainable way, ultrasound, microwave, pressurized liquid, enzyme hydrolysis, supercritical fluids, high hydrostatic pressure, pulsed electric field, and high voltage electrical discharges have been studied as non-conventional methods (Table 1) ...

**How to test for antioxidants in plants?** Among the SET methods, the most used are 2,2-di-phenyl-1-picrylhydrazyl (DPPH radical scavenging capacity assay), ferric reducing (FRAP) assay, Trolox equivalent antioxidant capacity (TEAC or ABTS) assay, copper reduction (CUPRAC) assay and reducing power assay (RP).

**What are endophytic fungi isolated from plants?** Endophytes are microorganisms that inhabit various plant parts and cause no damage to the host plants. During the last few years, a number of novel endophytic fungi have been isolated and identified from medicinal plants and were found to be utilized as bio-stimulants and bio fertilizers.

**How do you isolate fungi from plants?** Isolation of fungal pathogens The infected tissues along with adjacent small unaffected tissue are cut into small pieces (2–5 mm squares) and by using flame-sterilized forceps, they are transferred to sterile petridishes containing 0.1% mercuric chloride solution used for surface sterilization of plant tissues.

**How do you isolate mycorrhizal fungi from soil?** Isolation of Mycorrhizal spores Spore extraction from the soil was carried out using the Wet Sieving and Decanting Technique by Gerdemann and Nicolson (1963). The isolated spores were mounted on glass slide using Polyvinyl Alcohol- Lactic acid Glycerol (PVLG) and observed under compound microscope (100- 1000X).

**What are the three endogenous antioxidants?** Endogenous antioxidant enzymes play a major role in the redox status of muscle tissue, and under physiological conditions, they counteract the pro-oxidant actions of ROS. SOD, CAT and GSH-Px are among the most active and efficient enzymatic systems against oxidative stress (Niu et al. 2017).

**What is the function of SOD antioxidant?** SODs constitute a very important antioxidant defense against oxidative stress in the body. [7] Several studies have been performed that reveal the therapeutic potential and physiological importance of SOD. [8] The enzyme can serve as an anti-inflammatory agent and can also prevent precancerous cell changes.

**What are the activities of antioxidant enzymes?** The major function of antioxidant enzymes is averting reactive oxygen radical-induced tissue damage by preventing formation of reactive oxygen radical species (Sies, 1997; Young & Woodside, 2001), or by scavenging the highly reactive oxygen radical species and neutralizing them to inactive compounds (Al-Omar et al., ...

**What are the enzymatic activities of endophytic fungi?** The endophytic fungi produce some of the enzymes such as pectinases, cellulases, amylases, laccases, proteases, and lipases as one of the resistant mechanisms against pathogenic organisms and also for gaining nutrients from the host (Vasundhara et al.

**Which are the 2 most important antioxidants?** E and C vitamins are the the most important among vitamins as natural antioxidants. Vitamin C, which contains ascorbic acid and its oxidation product dehydroascorbic acid, has many biological activities in the human body. More than 85% of vitamin C in the human diet is provided from fruits and vegetables.

**What is the strongest form of antioxidants?**

**What are the big three antioxidants?** The “big three” vitamin antioxidants are vitamins E, A, and C, although it may be that they are called the “big three” only because they are the most studied.

**What disease is associated with a lack of superoxide dismutase?** Clinical and genetic studies indicate a direct correlation between mutations in SOD gene and neurodegenerative diseases, like Amyotrophic Lateral Sclerosis (ALS), Huntington's disease (HD), Parkinson's Disease (PD) and Alzheimer's Disease (AD).

**What supplements increase superoxide dismutase?** Dietary copper supplements modulate aortic superoxide dismutase, nitric oxide and atherosclerosis.

**Is superoxide dismutase good or bad?** Superoxide dismutase helps break down potentially harmful oxygen molecules in cells. This might prevent damage to tissues.

**How to reduce free radicals in the body?**

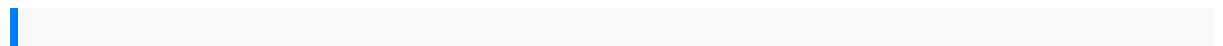
**What are the powerful antioxidant enzymes?** In mammalian cells, the major intracellular antioxidant enzymes include superoxide dismutase, catalase and glutathione peroxidase. As mentioned previously, SOD catalyzes the dismutation of  $O_2^{\cdot-}$  to  $H_2O_2$  and molecular  $O_2$ . Catalase and glutathione peroxidase further decompose  $H_2O_2$  into  $H_2O$  and  $O_2$ .

**What is oxidative stress in the human body?** Oxidative stress is an imbalance of free radicals and antioxidants in your body that leads to cell damage. It plays a role in many conditions like cancer, Alzheimer's disease and heart disease. Toxins like pollution and cigarette smoke can cause oxidative stress, while foods rich in antioxidants can help reduce it.

**How do you isolate endophytic fungi?** 2.2 Isolation of Endophytic Fungi The plant material was allowed to dry on a sterile filter paper after which it was cut in to pieces of 3 - 3.5cm with a sterile scalpel. Four pieces of each part were placed on tap water agar plate using a sterile forceps and incubated for 6 days at 26 - 27°C.

**What is the biological activity of endophytic fungi?** The studies have revealed the ability of endophytic fungi for producing many secondary metabolites such as phenols, quinones, xanthenes, isocoumarins, terpenoids, alkaloids, and steroids that work as anti-cancer, anti-viral, anti-bacterial, insecticidal, anti-inflammatory, anti-fungal, anti-diabetic, anti-oxidant, and ...

**What is the mechanism of endophytic fungi?** Endophytic fungi establish symbiotic associations with host plants through a process that involves the enzymatic degradation of the host plant's cell wall. To colonize the host plant tissue, endophytic fungi produce a range of cell wall-degrading enzymes including cellulase, laccase, pectinase, and xylanase.



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