

GABARITO - ESPELHO

DATA: ___/___/___

NOME: _____

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Leia o texto abaixo e responda as questões

Are mushrooms medicinal?

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- I. Mushrooms have featured in traditional Chinese medicine for centuries and dried extracts from fruit bodies occupy a lucrative segment of the market for herbal medicines in western countries. The advertising of these natural products in North America and Europe is poorly regulated, allowing companies to make fictitious statements about the medicinal benefits of mushrooms. A number of issues must be considered objectively to assess this controversial topic. We begin with the traditional uses of mushrooms in Chinese medicine.
- II. Medicinal use of the shiitake mushroom, *Lentinula edodes*, became widespread in the Ming Dynasty (1368–1644) after the development of methods for cultivating the fungus on logs (Jones 1995). Shiitake was adopted as a tonic that could counteract the quotidian aches, pains, and fatigue associated with aging. More specific virtues of shiitake were supposed to include its promotion of heart health and efficacy against lung disease and intestinal worms. It also became associated with the treatment of cancer. There is little experimental support for any of these qualities. Contemporary advocates of medicinal mushrooms argue that this dissonance is rooted in a mismatch in philosophy between Chinese and Western medicine.
- III. Traditional Chinese medicine treats symptoms of cardiovascular disease, for example, as a manifestation of an imbalance between multiple physiological processes in an individual patient. Treatments, including acupuncture and herbal medicines, are designed to restore balance to the ‘flow of energy’ in the body. (‘Flow of energy’ is placed in quotation marks because the meaning of this phrase cannot be articulated in any succinct manner.) Western medicine addresses some forms of heart disease very differently, by prescribing drugs that reduce blood pressure and serum cholesterol, and recommending changes in diet and exercise. The use of a combination of therapies in Chinese medicine, which is often adjusted for each patient, makes it difficult to measure the particular usefulness of shiitake mushrooms in a clinical trial.

- IV. A handful of experiments on the properties of specific chemical compounds extracted from shiitake have been promising (Memorial Sloan Kettering Cancer Center). Lentinan is a β -(1 \rightarrow 3)-D-glucan in the cell walls of the masses of hyphae that form the shiitake fruit body (Zhang *et al.* 2011). Lentinan research has demonstrated that the molecule acts as an adjuvant that stimulates the production of antibodies in mice injected with a vaccine against hepatitis B. Other experiments on tissue cultures show that lentinan stimulates cells of the immune system to attack cancer cells and cells infected with viruses. In a rare instance of a clinical trial using a mushroom extract, Japanese researchers found that patients receiving chemotherapy for advanced stomach cancer survived longer if lentinan was added to their drug cocktail (Ina *et al.* 2013). These results fall short of proving that shiitake is useful in cancer therapy, but they certainly encourage further study.
- V. As the Chinese embrace modern medicine, the global appetite for herbal medicines has moved in the opposite direction. Annual sales of these products account for a big chunk of the wider market for nutritional supplements that is valued at \$50 billion and seems impervious to the economic instability that has affected other business sectors (Harrison-Dunn 2014). This profitable trade provides a powerful incentive for companies to test the credulity of their customers and unsupported assertions have come to define the medicinal mushroom business.
- VI. The medicinal mushroom product range of Fungi Perfecti[®], a company based in Washington State, includes a variety of capsules and bottled fluids that contain extracts from the cultured mycelia of the fungi. The use of cultures rather than fruit bodies is interesting in itself, requiring consumers to accept that the active compounds in the mushrooms are generated in a constitutive fashion so that they also present themselves in the vegetative [hyphae](#) (Bak et al., 2014, Konno et al., 2014). Putting this complication aside, the company says that ‘Healthy respiratory support’ is furnished by a mixture of reishi and other mushrooms; chaga extract covers ‘Antioxidant and DNA support’, and maitake offers the promise of helping to ‘maintain healthy blood sugar levels.’
- VII. Another group of products targets particular parts of the body, with one dietary supplement addressing ‘breast health’, another affecting the brain (‘helps to support mental clarity’), and a third dealing with the liver. The list of ingredients in these supplements includes mushrooms that support ‘immune function’ (turkey tail) and ‘hormonal and adrenal function’ (lingzhi). An asterisk accompanies every property, referencing the following manufacturer's disclaimer: ‘These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.’ This is like making bicycles and telling customers that they are not meant to be ridden!
- VIII. Fungi Perfecti is one of many companies that market medicinal mushrooms and its product claims are quite modest compared with endorsements provided by other peddlers of naturopathic medicines. If something is sold for the purpose of improving heart health, it seems reasonable that there should be evidence for its potency and that this information should be available to the public. Unlike

prescription medicines, medicinal mushrooms have escaped these requirements, which means that a fruit body extract can be sold in the United States for the stated purpose of ‘comprehensive immune support’, or just about anything else, as long as the company provides the standard disclaimer. The laws in Europe are even looser, allowing companies in the United Kingdom to market medicinal mushrooms without employing a legal rider.

- IX. The medicinal mushroom industry is aware of growing criticism and many companies have scaled back the claims in their advertisements to protect themselves from lawsuits. Until quite recently, some catalogues listed extracts from cultures of mushroom mycelia for the treatment of cancer and other serious diseases. Few companies make these claims directly today, even under the protection of the asterisk.
- X. The majority of prescription drugs work by affecting particular biochemical pathways. The best-selling medicines for reducing cholesterol levels and blood pressure work by inhibiting single enzymes, and antibiotics disrupt specific molecular processes in bacterial cells.
- XI. None of these drugs are perfect and all of them can produce unpleasant side effects. But most of them work as advertised and the manufacturers can be held liable if their products harm consumers. Horrifying errors have been made in licensing some medicines, and the pharmaceutical industry wins few awards for altruism, but, warts and all, prescription drugs are a perfect reflection of the ethos of Western medicine. Anyone whose life has been saved by antibiotic therapy must agree that the discovery and development of the β -lactams and later generations of antibiotics represents one of the greatest achievements of the modern era.

(Extracted and adapted from: <https://www.sciencedirect.com/science/article/pii/S1878614616000180>)

As questões de 1 a 5 são de múltipla escolha. Para cada questão será aceita apenas uma resposta.

- 1) De acordo com o parágrafo I, é correto afirmar:
 - a) Na China, os cogumelos são vendidos em mercados há séculos.
 - b) O extrato de cogumelos representa um lucrativo segmento em países orientais.
 - c) Na América do Norte, há pouca regulamentação em relação à informação sobre produtos derivados de cogumelos.**
 - d) Na Europa e nos Estados Unidos, há muita propaganda de produtos derivados de cogumelos e seus benefícios.
 - e) O uso de cogumelos na medicina chinesa ainda apresenta aspectos controversos.

2) Sobre o cogumelo *shitake*, pode-se afirmar (parágrafo II):

a) **O uso do cogumelo tem sido adotado contra dores comuns e cansaço físico.**

b) Estudos específicos comprovam a eficácia do *shitake* no combate a doenças de pulmão e vermes estomacais.

c) Novos estudos indicam resultados benéficos do uso do *shitake* em doenças cardíacas.

d) Atualmente, os estudos realizados sobre o uso do cogumelo *shitake* no combate a doenças cardíacas e pulmonares têm recebido muito apoio.

e) O uso do cogumelo na medicina chinesa ainda é tema controverso na civilização ocidental.

3) Em resumo, o parágrafo III discorre sobre:

a) As atuais semelhanças entre as medicinas orientais e ocidentais.

b) As diferenças quanto ao uso do *shitake* na medicina chinesa e na medicina ocidental.

c) As vantagens da medicina chinesa em relação à medicina ocidental.

d) As desvantagens da medicina chinesa em relação à medicina ocidental.

e) **As diferentes formas de tratamento de doenças cardiovasculares na medicina chinesa e na medicina ocidental.**

4) No parágrafo IV, o autor cita alguns experimentos realizados. Sobre tais experimentos, é correto afirmar:

a) Os japoneses descobriram que uma substância encontrada no *shitake* pode atuar como um antibiótico.

b) Os experimentos em camundongos revelaram um potencial anticancerígeno.

c) **Os resultados dos experimentos são insuficientes para provar a eficácia do *shitake* em terapias contra o câncer.**

d) O uso do *shitake* em terapias contra o câncer está muito próximo de ser provado.

e) Os experimentos japoneses comprovam a eficácia do lentinano em vacinas contra a hepatite.

5) De acordo com o parágrafo V, pode-se afirmar:

a) Os chineses dominam o mercado de produtos naturais.

b) O mercado de produtos naturais vem se fortalecendo no mercado internacional.

c) O setor empresarial ainda está bastante incrédulo com a eficácia de produtos naturais.

d) Os chineses são os pioneiros em testar a eficácia de produtos naturais.

e) Apesar dos lucros da venda de produtos naturais, a credulidade nesse nicho empresarial ainda é baixa.

Responda as questões a seguir em língua portuguesa:

6) Que tipo de produtos vende a empresa Fungi Perfecti[®], parágrafo VI?

...a variety of capsules and bottled fluids that contain extracts from the cultured mycelia of the fungi. (uma variedade de cápsulas e fluidos que contêm extratos de micelia do fungo coletado.)

7) No parágrafo VII, o autor conclui com: *“This is like making bicycles and telling customers that they are not meant to be ridden!”* Em outras palavras, estariam fabricando bicicletas e dizendo aos seus consumidores que elas não foram produzidas para serem usadas. A que se refere o autor?

‘These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.’ (que os produtos não têm a função de diagnosticar, curar ou prevenir qualquer doença, portanto, vendem algo que não tem comprovação científica).

8) Que diferença é apontada pelo autor, no parágrafo VIII, com relação a forma de comercialização de produtos derivados de cogumelos nos Estados Unidos e na Europa?

Unlike prescription medicines, medicinal mushrooms have escaped these requirements, which means that a fruit body extract can be sold in the United States for the stated purpose of ‘comprehensive immune support’, or just about anything else, as long as the company provides the standard disclaimer. The laws in Europe are even looser, allowing companies in the United Kingdom to market medicinal mushrooms without employing a legal rider. (Nos Estados Unidos, esses produtos não precisam de prescrição médica, mas têm que conter a informação de que não estão comprovados. Na Europa, são vendidos livremente sem nenhuma observação).

9) Que diz o autor sobre a atual situação da indústria de cogumelos medicinais?

The medicinal mushroom industry is aware of growing criticism and many companies have scaled back the claims in their advertisements to protect themselves from lawsuits. (A indústria de cogumelos medicinais está atenta ao crescimento das críticas e muitas empresas reduziram as declarações em suas propagandas para se protegerem de processos).

10) Como agem os melhores medicamentos para reduzir o colesterol e a pressão arterial (parágrafo X)?

by inhibiting single enzymes, and antibiotics disrupt specific molecular processes in bacterial cells.(inibindo enzimas individuais e antibióticos que interrompam os processos moleculares específicos em células bacteriais).

Tradução –

Converta para o português a passagem a seguir extraída do texto em questão:

None of these drugs are perfect and all of them can produce unpleasant side effects. But most of them work as advertised and the manufacturers can be held liable if their products harm consumers. Horrifying errors have been made in licensing some medicines, and the pharmaceutical industry wins few awards for altruism, but, warts and all, prescription drugs are a perfect reflection of the ethos of Western medicine. Anyone whose life has been saved by antibiotic therapy must agree that the discovery and development of the β -lactams and later generations of antibiotics represents one of the greatest achievements of the modern era.

Nenhuma dessas drogas é perfeita e todas elas podem produzir efeitos colaterais desconfortáveis. Mas a maioria delas atua como anunciado e os produtores podem ser responsabilizados se os produtos causarem mal ao consumidor. Erros terríveis foram feitos ao se licenciar alguns medicamentos e a indústria farmacêutica ganha muitos prêmios por seu altruísmo, mas, de todas as formas, a prescrição de drogas é um reflexo perfeito do etos da medicina ocidental. Qualquer pessoa cuja vida foi salva por terapia de antibióticos tem que concordar que a descoberta e o desenvolvimento do β -lactama e posteriores gerações de antibióticos representa uma das maiores conquistas da era moderna.