

Short Review

Yemen is free of COVID-19

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Among all the countries, Yemen is free of corona virus, and no single case has been recorded till today. Yemen is characterized by its mother geographical location on the Red Sea and its population is approximately 30 million people and an area of 555,000 square kilometers.

Below are the factors that made Yemen free of coronavirus infection:

Mobility

Yemen's international air, sea and land ports were closed for five years ago due to the war, and Yemen became isolated from the outside world, in addition to the difficulty of moving between governorates, which made Yemen as if it were in quarantine.

On the other hand, there are no internal means of mass transportation in Yemen, such as mass transit buses, trains and subways, which reduce congestion, group mixing and transmission of infection.

Habits

Almost 90% of Yemeni women wear the niqab, which serves as masks and reduces transmission of infection. Also, there are neither nightclubs or cafes nor a cinema in Yemen, and this reduces crowding and long mixing of citizens.

Most Yemenis are present in their homes from nine o'clock in the evening, as if it is a ban and a quarantine.

Food

Yemenis eat their food very hot that contains garlic, onions, black bean, ginger, black and green pepper, which have an anti-virus effect [1-4].

Khat

Yemenis consume khat daily and for long hours, which has an anti-bacterial and anti-viral effect. Some khat contains a pesticide residue and fertilizer that has an effect on viruses. In addition khat has supporting effect of the cardiovascular and respiratory system [5,6].

Tobacco

Yemenis consume tobacco in various ways, smelling the

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smoke and direct smoking of tobacco, which has an anti-virus effect [7,8].

On other hand, Yemenis peoples used menthol to treat influenza, which have anti-virus properties [9,10].

Incidents of other infections, such as influenza virus in Yemen is less than those in neighbor countries [11-21].

Governmental actions

Early government measures taken by the government, such as the closure of schools and universities, niches, congregations, spraying, use of masks, and others contributed to the non-transmission of infection. Incidents of other infections, such as influenza virus infection in this year is less than those in past years.

121 people were screened for the COVID-19 virus and 120 were found negative for the presence of virus and in one case serum antibodies against the virus was tested negative according to WHO report.

All above factors made Yemen free of COVID-19 infection and resistance to virus if any.

References

1. Weber ND, Andersen DO, North JA, Murray BK, Lawson LD, et al. In vitro virucidal effects of Allium sativum (garlic) extract and compounds. *Planta Med.* 1992; 58: 417-423.
PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/1470664>
2. Mehrbod P, Amini E, Tavassoti-Kheiri M. Antiviral Activity of Garlic Extract on Influenza Virus. *Iranian J Virol.* 2009; 3: 19-23.

3. Leyla B, Peir H, Ali G. Garlic: a review of potential therapeutic effects. *Avicenna J Phytomed.* 2014; 4: 1–14.
PubMed: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4103721/>
4. Abiy E, Berhe A. Anti-Bacterial Effect of Garlic (*Allium sativum*) against Clinical Isolates of *Staphylococcus aureus* and *Escherichia coli* from Patients Attending Hawassa Referral Hospital, Ethiopia. *J Infec Dis Treat.* 2016; 2: 2.
5. Yen T, Linda LC, Larry ED, Steven JL, Victoria S, Gaynor C. Antiviral Properties of Garlic: In vitro Effects on Influenza B, Herpes Simplex and Coxsackie Viruses. *Planta Medica.* 1985, 460-461.
PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/17342616>
6. Masomeh L, Narges M, Hassan R, Hadi A. Peppermint and its functionally. A Review. *Arch Clin Microbiol.* 2017; 8: 54.
7. Jin Z, Ke-Ping Y, Jin-Xuan C. Antimicrobial activity and mechanism of action of black pepper essential oil on meat-borne *E.coli*. *Front Microbiol.* 2016; 7: 2094.
PubMed: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5209337/>
8. Koshak A, Wei L, Koshak E, Wali S, Alamoudi O, et al. *Nigella sativa* Supplementation Improves Asthma Control and Biomarkers: A Randomized, Double-Blind, Placebo-Controlled Trial. *Phytother Res.* 2017; 31: 403-409.
PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/28093815>
9. Kheirouri S, Hadi V, Alizadeh M. Immunomodulatory Effect of *Nigella sativa* Oil on T Lymphocytes in Patients with Rheumatoid Arthritis. *Immunol Invest.* 2016; 45: 271-283.
PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/27100726>
10. Nazir S, Arif Zaidi SM, Zaidi Z. Kalonji Seeds (*Nigella sativa*) in strengthening the Immune system. *Madridge J Case Rep Stud.* 2018; 2: 55-56.
11. Yun Hsiang C, Kuang Lun W, Chia Hsiang C. Methamphetamine Reduces Human Influenza A Virus Replication. *PLoS One.* 2012; 7: e48335.
PubMed: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3491060/>
12. Hamid E, Jaber S, Mahmoud M. El. Antimicrobial and Cytotoxic Activity of the Extracts of Khat Callus Cultures. Reprinted from: *Perspectives on new crops and new uses.* 1999. J. Janick (ed.), ASHS Press, Alexandria, VA.
13. Shadon P, Shellard EJ. An anatomical study of Ethiopian khat (leaf of *Catha edulis* Forssk.) *J Pharm Pharmacol.* 1972; 14: 110–118.
PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/13911098>
14. Kalix P. Pharmacological properties of the stimulant khat. *Pharmacol. Ther.* 1990; 48: 397–416.
PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/1982180>
15. Calil IP, Fontes EPB Plant immunity against viruses: antiviral immune receptors in focus. *Annals of Botany.* 2017; 119: 711–723.
PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/27780814>
16. Shunhei Y, Tomokazu M, Kazuyoshi K et al. Effect of nicotine on innate antiviral pathways and HCV replication. *Conference Reports for NATP.* San Diego CA, May 17-22, 2008.
17. Furusawa E, Ramanathan S, Suzuki N, Tani S, Furusawa S. Antiviral Activity of Tobacco Smoke Condensate on Encephalomyocarditis Infection in Mice. *Antimicrob Agents Chemother.* 1973; 3: 484–487.
PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/4364177>
18. Haiyan W, Mouming Zhao B, Yueming J, Guoha R. Identification of polyphenols in tobacco leaf and their antioxidant and antimicrobial activities. *Food Chemistry.* 2008; 107; 4: 1399-140
19. Yan N, Du Y, Liu X, Zhang H, Liu Y, et al. A Review on Bioactivities of Tobacco Cembranoid Diterpenes. *Biomolecules.* 2019; 9.
PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/30654586>
20. Primo V, Rovera M, Zanon S, Oliva M, Demo M, et al. Determination of the antibacterial and antiviral activity of the essential oil from *Minthostachys verticillata* (Griseb.) Epling. *Rev Argent Microbiol.* 2001; 33: 113-117.
21. Taylor DJR, Hamid SM, Andres AM, Saadaeijahromi H, Piplani H, et al. Antiviral Effects of Menthol on Coxsackievirus B. *Viruses.* 2020; 12. pii: E373.
PubMed: <https://www.ncbi.nlm.nih.gov/pubmed/322310226>