The Role of Galangal-Cinnamon Mixture in The Treatment of COVID-19 Patients.

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Abstract

Backgrounds:

There is an increasing need to develop innovative strategies to combat the persistent threat of COVID-19. Natural products may help strengthen the body's immune response to the virus, offering minimal side effects and lower treatment costs. This study aimed to assess and characterize the effectiveness of a galangal–cinnamon mixture in the management of COVID-19.

Methods:

This randomized controlled study enrolled 38 patients with RT-PCR–confirmed COVID-19, including 20 males. Nineteen patients received a galangal–cinnamon mixture in addition to the standard Egyptian COVID-19 protocol, without antiviral therapy, while the remaining 19 patients served as the control group and were treated with the standard protocol alone, also without antiviral therapy.

Participants were allocated into two groups: Group 1 (galangal–cinnamon mixture; n = 19) and Group 2 (control; n = 19). Each group was further stratified into three age categories: 30–50 years, 51–70 years, and over 70 years. The herbal mixture was administered as sachets once daily for 10 days. Each sachet contained 2 g of powdered galangal (Alpinia officinarum) and 2 g of powdered cinnamon (Cinnamomum zeylanicum). Patients were monitored daily until clinical improvement, and follow-up assessments focused on time to recovery, type of oxygen therapy required, and overall clinical outcomes.

Results:

Patients were recruited in Egypt between September and December 2021. The mean recovery time was 11.5 days in Group 1, compared with 26.2 days in the control group. In Group 1, the mean recovery times were 9.7, 11.2, and 12.7 days among patients aged 30–50, 51–70, and over 70 years, respectively. In the control group, the corresponding recovery times were 23.8, 28.3, and 30.8 days.

In Group 1, 94.7% of patients required conventional oxygen therapy combined with high-flow oxygen, while 5.3% required high-flow oxygen with continuous positive airway pressure (CPAP). In contrast, in the control group, 68.4% required conventional oxygen therapy plus high-flow oxygen, and 31.6% required mechanical ventilation.

Regarding clinical outcomes, 84.2% of patients in Group 1 recovered, whereas 15.8% died. In the control group, 31.6% recovered, 26.3% died, 15.8% developed a chronic cough, 10.5% required ICU admission, and 15.8% experienced persistent fatigue.

Conclusion:

Natural products may offer a cost-effective and time-efficient approach to developing new therapeutic options. The galangal–cinnamon mixture showed considerable efficacy in alleviating mild to moderate COVID-19 symptoms and appeared to provide meaningful protection against post-COVID syndrome. It may also exhibit antiviral

activity against SARS-CoV-2 and help reduce the need for multiple medications, thereby minimizing the risk of drug-related adverse effects.
Recovery time was positively associated with age, as younger patients tended to experience milder disease and faster symptom resolution compared with older individuals.
Keywords: Galangal; Cinnamon; Mixture; COVID-19

Introduction

The entire world has been confronted with the COVID-19 pandemic.[1, 2] The virus has infected millions of people and claimed thousands of lives [3, 4]. It can cause severe respiratory complications as well as multi-organ failure [5, 6]. Mortality rates are higher among elderly individuals [7, 8] and those with underlying comorbidities [7, 9]. To date, no specific, universally accessible, and affordable treatment for COVID-19 has been established [10-12]. Consequently, prevention remains the most effective strategy to limit infection [13, 14].
Strengthening the immune system through proper nutrition is essential for maintaining good health [15-20]. A balanced diet rich in fruits and vegetables offers significant health benefits [21, 22]. Adequate intake of protein sources such as fish, eggs, and lean meats, along with spices and nuts, is also recommended [23]. Spices, in particular, can be prepared as herbal beverages with potential medicinal value. They contain bioactive compounds that may reduce cellular damage and inflammation. Although various instant spiced beverages are available, their strong and distinctive flavors may limit their acceptance among some individuals. [24, 25]. For convenience and ease of preparation, instant drinks in tea-bag form have gained popularity among the public. Recently, herbal plants have attracted attention because of their natural origin and relatively fewer side effects compared with synthetic drugs [20, 26, 27]. Many possess anti-inflammatory, antimicrobial, anticonvulsant, and antipyretic properties [28, 29], largely due to bioactive constituents such as polyphenols and monophenols. [30] Adding natural flavors to spiced instant drinks may further enhance palatability and public acceptance [25].
Accordingly, we conducted a randomized clinical trial to evaluate the effects of selected herbal plants in patients with moderate COVID-19. In this study, we chose galangal and cinnamon as a combined preparation. Recent research has demonstrated that several herbal plants exhibit antiviral activity against members of the Coronavirus family, including galangal (*Alpinia officinarum*) and cinnamon (*Cinnamomum zeylanicum*) [31]. These plants may inhibit coronavirus activity through their bioactive compounds; galangal contains flavonoids, while cinnamon is rich in eugenol. [31]
The aim of this study was to assess the antiviral and inhibitory potential of a galangal–cinnamon mixture against coronaviruses, as well as its ability to enhance immune function and support disease prevention.

Methods

A randomized controlled study was conducted involving 38 patients (20 males) with COVID-19 confirmed by reverse transcription–polymerase chain reaction (RT-PCR). All participants met the eligibility criteria. The study protocol was approved by the Research Ethics Committee of the Faculty of Pharmacy, Beni-Suef University (REC-H-PhBSU-22015), and was carried out in accordance with the principles of the Declaration of Helsinki. Written informed consent was obtained from all participants.

Inclusion Criteria

- Age ≥18 years.
- Positive COVID-19 RT-PCR result.
- Mild to moderate disease with clinical manifestations.
- Not receiving any other antiviral medications.

Exclusion criteria

- Severe COVID-19 symptoms.
- Severe hepatic disease.
- Pregnancy or breastfeeding.
- Age <18 years.

Sample Size

As this was an exploratory pilot study, no formal a priori power calculation was performed. The sample size (n = 38; 19 per group) was determined based on feasibility during the study period. We acknowledge that this sample size is underpowered to detect small-to-moderate differences in clinical outcomes and limits the generalizability of the

findings.

Procedure

Patients were randomly assigned to two groups, both of which received the standard Egyptian COVID-19 treatment protocol without antiviral therapy. Group 1 consisted of 19 patients who received, in addition, a galangal–cinnamon mixture administered as sachets. Group 2 included 19 patients who received only the routine protocol and served as the control group.

The galangal–cinnamon mixture was administered once daily for 10 days. Each sachet contained 2 g powdered galangal (Alpinia officinarum) and 2 g powdered cinnamon (Cinnamomum zeylanicum). The contents were boiled in 200 mL of water for 5 minutes and the resulting aromatic infusion was consumed warm once daily.

Patients were monitored daily until resolution of clinical symptoms and confirmation of a negative COVID-19 PCR result. Follow-up evaluations included laboratory parameters, the type of oxygen therapy required, and overall recovery time. Recovery time was defined as the interval between a positive COVID-19 PCR test and a subsequent negative PCR result. To assess the impact of age on recovery duration, each group was further stratified into three age categories: 30–50 years, 51–70 years, and over 70 years.

Recovery was defined as clinical resolution of symptoms with normalization of oxygen saturation (SpO_2 ≥94% on room air) and a subsequent negative RT-PCR result.

Statistical Analysis

Statistical analysis was performed using SPSS version 26. Continuous variables were expressed as mean ± standard deviation (SD). Independent sample t-tests were used to compare normally distributed continuous variables between groups. Categorical variables were compared using Chi-square or Fisher's exact test as appropriate. A p-value < 0.05 was considered statistically significant.

Results

In this study, 20 males and 18 females were followed from September to December 2021 in Egypt. The oldest patient was 88 years old, and the youngest was 30.

Disease symptoms, x-ray findings, and co-morbidities:

In Group 1, 31.6% of patients had diarrhea, 89.5% had fever, 31.6% had anosmia, 73.7% had breath shortness, and 89.5% had cough; in Group 2, 31.6% had diarrhea, 52.6% had fever, 21.05% had anosmia, 89.5% had breath shortness, 21.05% had chest pain, and 89.5% had cough.Regarding x-ray findings: the distribution of lesions was bilateral in 10.5% of group 1 cases and (31.6%) of group 2 cases. The number of lesions was multifocal involvement in (89.5%) of group 1 cases and (68.4%) of group 2 cases.

In terms of co-morbidities, 31.6% of group 1 cases and 44.4% of group 2 cases had Diabetes Mellitus.44.4% of group 1 cases and 31.6% of group 2 cases were suffering from hypertension. Table 1 shows the frequency of COVID-19 symptoms and co-morbidities for each group.

Laboratory measures and recovery time*:*

In Group 1: the mean value of SGPT was 41.5, the mean value of SGOT was 46.5, the mean value of PLT was 252.6, the mean value of CRP was 70.3, the mean value of D.Dimer was 0.78, the mean value of Ferritin was 583.01, the mean value of hemoglobin was 12.8, the mean value of WBCs was 9.9, the mean value of neutrophils was 75.05 and the mean value of lymphocytes was 12.3; In Group 2, the mean value of SGPT was 30.9, the mean value of SGOT was 36.05, the mean value of PLT was 242.1, the mean value of CRP was 57.8, the mean value of D.Dimer was 1.6, the mean value of Ferritin was 409.3, the mean value of hemoglobin was 11.8, the mean value of WBCs was 7.8, the mean value of neutrophils was 61.3 and the mean value of lymphocytes was 18.9. The mean values of these laboratory parameters for both groups are presented in Table 2. The mean recovery time for Group 1 was 11.5 days and for Group 2 was 26.2 days. For Group 1, the recovery time was 9.7, 11.2, 12.7 days for the age groups 30-50, 51-70, more than 70 years, respectively. For Group 2, the recovery time was 23.8, 28.3, 30.8 days for the age groups 30-50, 51-70, more than 70 years, respectively (Table 3). Tables 2 & 3 show The mean values of laboratory parameters & recovery time for each group.

Oxygen therapy used and outcomes*:*

In Group 1, 94.7% of patients required ordinary oxygen therapy plus high flux oxygen, while 5.3% required high flux oxygen plus CPAP; in Group 2, 68.4% required ordinary oxygen therapy plus high flux oxygen, while 31.6% required mechanical ventilation.

Regarding outcomes, 15.8% of the patients in group 1 died and 84.2% improved.

In group 2, however, 26.3% of the patients died, 31.6% were improved, 15.8% had chronic cough, 10.5% were ICUed, and 15.8% were fatigued. Table 4 shows the type of oxygen therapy used and the outcome for each group.

Table 1. The frequency of COVID-19 symptoms and co-morbidities for each group

	Group 1(%) (n=19)	Group 2 (control group) (%) (n=19)	Sig.
Sex			
Male	9 (47.4%)	11 (52.6%)	0.516
Female	10 (55.6%)	8 (44.4%)	
Symptoms			
Diarrhea	6 (31.6%)	6 (31.6%)	1.000
Fever	17 (89.5%)	11(52.6%)	0.027
Anosmia	6 (31.6%)	4 (21.05%)	0.461
Breath shortness	14 (73.7%)	17 (89.5%)	0.209
Chest pain	0 (0%)	4 (21.05%)	0.034
Cough	17 (89.5%)	11(52.6%)	0.027
X-ray			
Bilateral	2 (10.5%)	6 (31.6%)	
multifocal	17 (89.5%)	13 (68.4%)	0.111
Co-morbidities			
Diabetes Mellitus	6 (31.6%)	8 (44.4%)	0.501
Hypertension	8 (44.4%)	6 (31.6%)	0.501

Discussion:

The COVID-19 pandemic remains a major global health challenge [32-35], and identifying new and effective strategies to mitigate its impact is essential [36-38]. The use of antibiotics in the management of mild to moderate COVID-19 may increase the risk of antimicrobial resistance [39-41]. Consequently, natural products have gained attention as potential therapeutic alternatives for various diseases[15, 42-44], including viral infections, owing to their generally favorable tolerability in humans [45-47]. Ongoing research continues to explore the potential of herbal medicine in reducing the burden of coronavirus disease [48-50].

Herbs and spices have been extensively studied worldwide for their potent antimicrobial and antioxidant properties and their beneficial physiological effects. They contain diverse bioactive constituents, including sulfur-containing compounds, phenolics, flavonoids, alkaloids, tannins, and phenolic diterpenes [45].

Accordingly, this study aimed to investigate the role of a galangal–cinnamon mixture in the treatment of coronavirus infection.

Galangal (*Alpinia galanga*) has long been valued for both culinary and medicinal purposes. It has been traditionally used to manage conditions such as hemorrhoids, abdominal pain, menstrual irregularities, inflammation, metastatic breast cancer, and even as an anti-aging agent [51, 52]. Cinnamon (*Cinnamomum zeylanicum*) has been widely used in cooking for centuries and is recognized for its health-promoting properties. Its antioxidant and bioactive components have been associated with potential benefits in diabetes, cancer, cardiovascular diseases, and neurological disorders [53]

Previous molecular docking studies have demonstrated the potential efficacy of compounds found in *Alpinia galanga* against SARS-CoV-2, showing strong binding affinity to viral receptor proteins. This high binding affinity may explain its inhibitory effects on viral replication.[54] Similarly, cinnamon has been reported to exhibit anti-inflammatory, antiviral, antioxidant, and anti-obstructive properties that may be beneficial against SARS-CoV-2 [55]. It has been shown to act on the main protease enzyme of the virus [56, 57].

Table 2. Mean values of laboratory parameters & recovery time for each group

	Drug	N	Mean	Std. Deviation	Std. Error Mean	Sig.
Age	Drug	19	63.7895	11.44833	2.62643	
	control	19	60.4737	15.54695	3.56671	.362
Sgpt	Drug	19	41.4632	51.49874	11.81462	
	control	19	30.9474	5.93926	1.36256	.001
Sgot	Drug	19	46.4526	61.94517	14.21120	
	control	19	36.0526	6.68725	1.53416	.001
PLT	Drug	19	252.6316	79.26763	18.18524	
	control	19	242.1053	50.66436	11.62320	.025
CRP	Drug	19	70.2616	35.25455	8.08795	
	control	19	57.7826	51.63454	11.84578	.028
Ddimer	Drug	18	.78161	.347972	.08201	
	control	19	1.6384	2.34166	.53721	.000
Ferritin	Drug	19	583.0132	186.68437	42.82833	
	control	19	409.3232	289.39461	66.39168	.011
HB	Drug	19	12.8421	1.64091	.37645	
	control	19	11.8368	1.48781	.34133	.834
WBCs	Drug	19	9.9105	6.28790	1.44254	
	control	19	7.7842	4.41037	1.01181	.116
Neutrophile	Drug	19	75.0526	6.06881	1.39228	
	control	19	61.2842	22.85357	5.24297	.012
Lymph	Drug	19	12.3474	6.02802	1.38292	
	control	19	18.9405	10.40672	2.38747	.019
PH	Drug	19	7.4616	.01708	.00392	
	control	19	7.4579	.02043	.00469	.475
PCO3	Drug	19	33.8421	4.69353	1.07677	
	control	19	33.6316	4.57299	1.04912	.857
HCO3	Drug	19	21.9789	5.29912	1.21570	
	control	19	21.9789	5.29912	1.21570	1.000
Recovery Time	Drug	19	11.4737	4.20804	.96539	
	control	19	26.2105	10.23924	2.34904	.006

The clinical findings of the present study demonstrated that the galangal–cinnamon mixture was highly effective in managing COVID-19. Patients in Group 1 showed marked improvement in clinical outcomes, shorter recovery time, and lower mortality compared with the control group, highlighting the mixture's potential in accelerating recovery.

The mean recovery time for patients with moderate COVID-19 in this study was 11.5 ± 5.7 days. In Group 1, patients who received the galangal–cinnamon mixture had a mean recovery time of 11.5 days, compared with 26.2 days in the control group, further supporting its therapeutic benefit.

Recovery duration was positively associated with age [58]. Patients over 70 years experienced longer recovery periods than those aged 51–70 years, who in turn had longer recovery times than those aged 30–50 years. This finding indicates that recovery time increases with age, and younger patients are less likely to develop severe disease and tend to recover more rapidly, consistent with findings reported by Manash et al. and David Gurwitz [59, 60].

The reduced need for CPAP and mechanical ventilation, along with the shorter recovery time observed in Group 1, reflects significant clinical improvement and suggests that this herbal combination may be effective in managing mild to moderate COVID-19.

Table 3. The mean recovery time for each age group

	Group 1(mean Recovery time)	Group 2 (control group) (mean Recovery time)
Age groups		
30-50 years	9.7	23.8
51-70 years	11.2	28.3
more than 70 years	12.7	30.8

Table 4. Type of oxygen therapy used & the outcome for each group

	Group 1(%) (n=19)	Group 2 (control group) (%) (n=19)	Sig.
Oxygen treatment therapy			
oxygen therapy- High flux			
High flux- CPAP	18 (94.7%)	13 (68.4%)	0.02
mechanical ventilation	1 (5.3%)	0 (0%)	
Outcome	0 (0%)	6 (31.6%)	
Died			
Improved	3 (15.8%)	5 (26.3%)	
chronic cough	16 (84.2%)	6 (31.6%)	
ICU	0 (0%)	3 (15.8%)	0.011
Fatigue	0 (0%)	2 (10.5%)	
	0 (0%)	3 (15.8%)	

Notably, the galangal–cinnamon mixture appeared to reduce the duration of symptoms and protect against post-COVID syndrome. In the control group, 15.8% of patients developed chronic cough and fatigue as post-COVID manifestations, whereas no post-COVID syndrome was reported among patients in Group 1. Recent studies have similarly highlighted the role of medicinal plants in managing post-COVID complications [61, 62].

Furthermore, 10.5% of patients in the control group required ICU admission, and 31.6% required mechanical ventilation, indicating greater clinical deterioration compared with Group 1. These findings further support the therapeutic efficacy of the galangal–cinnamon mixture and are consistent with previous research [63].

Based on these results, we recommend the galangal–cinnamon mixture as a supportive therapeutic option to reduce COVID-19 morbidity and mortality, given its demonstrated efficacy, minimal side effects, and cost-effectiveness.

Limitations

This study has several important limitations:

- Small sample size (n = 38), which limits statistical power and external validity.
- Pilot design without formal sample size calculation.
- Possible baseline severity imbalance between groups (oxygen requirement and inflammatory markers).
- Single-center design.
- Lack of blinding, which may introduce performance or detection bias.

Future large-scale, randomized controlled trials with adequate power are required to confirm these findings.

Conclusion:

Natural products may help reduce both the cost and time associated with developing new therapeutic agents. The galangal–cinnamon mixture demonstrated strong efficacy in relieving symptoms of mild to moderate COVID-19. These herbal preparations also appear to offer meaningful protection against post-COVID syndrome. The galangal–cinnamon combination may possess antiviral activity against SARS-CoV-2 and could potentially reduce the number of medications required in COVID-19 management, thereby minimizing drug-related adverse effects. Recovery time was found to increase with age, as younger individuals were less likely to develop severe disease and tended to

recover more quickly from COVID-19 symptoms than older patients.

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