Medicinal Herb Briefs: *Zingiber officinale*

**About this document:** This document summarizes information available on medicinal herb candidates for COVID19. One Medicinal Herb Brief document covers one candidate at a time.

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1. **Summary Information on *Zingiber officinale***

<table>
<thead>
<tr>
<th>Information About the Herb for Reported Indication(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Common Name</td>
</tr>
<tr>
<td>Botanical Name (Family)</td>
</tr>
<tr>
<td>Type of Plant/Source of Herbal Ingredients</td>
</tr>
<tr>
<td>TKDL Information</td>
</tr>
<tr>
<td>Indian Pharmacopeia Information</td>
</tr>
<tr>
<td>Reported Pharmacological Effects</td>
</tr>
<tr>
<td>Reported Therapeutic Target(s)</td>
</tr>
</tbody>
</table>
| Herb is reported to be beneficial for which conditions? | • Prophylaxis of nausea and vomiting associated with motion sickness, postoperative nausea, pernicious vomiting in pregnancy, and sea sickness.  
• Treatment of Dyspepsia, Flatulence, Colic, Vomiting, Diarrhea, Spasms, and |
other stomach complaints. Powdered ginger is further employed in the treatment of colds and flu, to stimulate the appetite, as a narcotic antagonist, and as an anti-inflammatory agent in the treatment of migraine headache and rheumatic and muscular disorders


<table>
<thead>
<tr>
<th>Is the herb or its extract form used for clinical purposes?</th>
<th>Yes – Both</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Prescribed Dose</th>
<th>2-3 ml of the drug in juice form with honey</th>
</tr>
</thead>
<tbody>
<tr>
<td>For motion sickness in adults and children more than 6 years: 0.5 g, 2–4 times daily. Dyspepsia, 2–4g daily, as powdered plant material or extracts</td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Route of Administration</th>
<th>Oral</th>
</tr>
</thead>
</table>

| Safety Profile (dose range in which it has been tested to be safe in humans) | Data not available |

<table>
<thead>
<tr>
<th>Adverse events/Side effects reported at the current prescribed dose</th>
<th>Ginger is listed on the U. S. FDA’s GRAS (generally recognized as safe) list The British Herbal Compendium documents no adverse effects of ginger</th>
</tr>
</thead>
</table>

https://www.fda.gov/food/food-additives-petitions/food-additive-status-list

https://bhma.info/british-herbal-compendium-vol-1/

<table>
<thead>
<tr>
<th>Reported Drug-Herb interactions</th>
<th>Few ginger–drug interactions have been reported in the literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ginger does not interact with the anti-coagulant drug Warfarin</td>
<td></td>
</tr>
<tr>
<td>Ginger and Nifedipine have a synergistic effect on anti-platelet aggregation</td>
<td></td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Link to Datasheet</th>
<th>Data not available</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Regions where Herb is found</th>
<th>Local Distribution: Andhra Pradesh, Andaman &amp; Nicobar, Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Gujarat, Himachal Pradesh, Jammu &amp; Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Orissa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Distribution: China, Nigeria, Indonesia, Bangladesh, Thailand, Philippines, Jamaica</td>
<td></td>
</tr>
</tbody>
</table>

http://agritech.tnau.ac.in/banking/PDF/Ginger.pdf

<table>
<thead>
<tr>
<th>Is the Herb or Extract being sold in India?</th>
<th>Yes – Both</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Indian Manufacturer(s)</th>
<th>Herb- Fresh rhizomes available in local markets. Extract- Synthite Industries, Kancor, Alchem International, Arjuna Naturals</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>International Manufacturer(s)</th>
<th>Ransom Naturals (UK)</th>
</tr>
</thead>
</table>

https://www.pharmacompass.com/manufacturers-suppliers-exporters/zingiber-officinale-rhizoma

| Cost of the Herb and Extract products in India | High quality extract – Rs.850 and above for 1kg |

<table>
<thead>
<tr>
<th>Information About the Major Bioactive for Reported Indication(s)</th>
<th>NOTE – THIS INFORMATION IS ONLY FOR THE MAJOR BIOACTIVE IN THE HERB</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>What is the Major Bioactive in the Herb?</th>
<th>No Major Bioactive reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constituents reported - Fresh Ginger volatile oil contains Cineole Zingiberol, and Sesquiterpene like Zingiberene, Bisabolene and Sesqui phellandrene, Gingerosol in the oleo-resin</td>
<td></td>
</tr>
</tbody>
</table>


| Is the Major | Not Applicable |
Bioactive, in isolated form used for clinical purposes? | Not Applicable
---|---
Drug Bank ID | Not Applicable
Reported Pharmacological effects | Not Applicable
Reported Therapeutic Target | Not Applicable
Reported Mode of Action | Not Applicable
Bioactive is reported to be beneficial for which conditions? | Not Applicable
Prescribed Dose | Not Applicable
Route of Administration | Not Applicable
Safety Profile (dose range in which it has been tested to be safe in humans) | Not Applicable
Adverse events/Side effects reported at the current prescribed dose | Not Applicable
Reported Drug-Bioactive interactions | Not Applicable
Link to Datasheet for Bioactive | Not Applicable
Is the Bioactive being sold in India? | Not Applicable
Indian Manufacturer(s) | Not Applicable
International Manufacturer(s) | Not Applicable
Cost of the Bioactive in India | Not Applicable

**Information About the Candidate for COVID-19**

**Repurposing Claim**
Treatment; New Indication + New dose (not confirmed)

**Rationale for Repurposing for COVID19/MoA? –**
- Anti-inflammatory activity: Z.officinale inhibits various signaling pathways including NF-kB mediated pro-inflammatory cytokine expression as demonstrated in-vitro and in-vivo studies. It is also reported to be a natural immune booster.
  - [https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2664283/](https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2664283/)
  - [https://doi.org/10.4315/0362-028X.JFP-15-593](https://doi.org/10.4315/0362-028X.JFP-15-593)

**Proposed use as Primary or Adjuvant?**
Primary and Adjuvant

**Pre-Clinical Data**
2 docking studies (1 published, 1 in review) shows that 6-Gingerol (bioactive...
phenolic phytocompound found in fresh ginger rhizome) binds to several SARS-CoV-2 targets – Main protease (Study 1: -15.7591 KJ/mol; Study 2: Binding energy $\Delta G$ -5.38) viral RNA binding protein and Spike glycoprotein which are essential for viral entry and replication. 

https://www.researchgate.net/publication/340790291
https://www.preprints.org/manuscript/202003.0450/v1

Status of Clinical Trials

2 trials ongoing in India (with formulations containing Z. officinale extract)

<table>
<thead>
<tr>
<th>Trial ID/Link</th>
<th>Type of Trial</th>
<th>Form used</th>
<th>No. of patients</th>
<th>Drug Combination/ Dose/ Stage of Disease</th>
<th>Primary and Secondary Measures</th>
<th>Has data from the trial been published?</th>
</tr>
</thead>
<tbody>
<tr>
<td>CTRI/2020/04/024883</td>
<td>Interventional, Randomised controlled, Single blinded multicentre, comparative study</td>
<td>Herb Extract</td>
<td>112</td>
<td>ZingiVir-H tablet</td>
<td>Dose: 500 mg each consumed once in 3 hours ±1 hour between 6 AM and 9 PM in a given day for a minimum duration of 10 days to Maximum 15 days as per the clinical conditions and disease outcome. Stage: Data not available. Primary: The Odds of Ratio for Improvement on a 7-point Ordinal Scale on Day 15 [Time Frame: Day 15 from the day of study inclusion]. Secondary: To find out the anti pyretic activity of ZingiVir H.</td>
<td>No</td>
</tr>
<tr>
<td>CTRI/2020/05/024967</td>
<td>Interventional, Single arm trial</td>
<td>Herb Extract</td>
<td>30</td>
<td>MyVir tablet</td>
<td>Dose: Twice daily after meal for 21days Stage: Data not available. Primary: Improvement in Immunity and anti viral properties in patients who are assessed daily for symptoms which include cough, fever with or without chills and difficulty in breathing for the period they are in quarantine. Secondary: Improvement in the clinical variables including total Leukocyte Count, Absolute Leukocyte Count, IL-6 and Hs CRP baseline to end of the quarantine period i.e. 21 days.</td>
<td>No</td>
</tr>
</tbody>
</table>

Key Data from Clinical Trials

Data not available

<table>
<thead>
<tr>
<th>IP Status</th>
<th>Status/ Molecule</th>
<th>Zingiber officinale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Approved and Active applications</td>
<td>227674 (No link on WIPO site)</td>
<td>Title: Herbal compositions for treatment of aids and preparation thereof Inventor: Ayare Shambabu Devappa Filing Date: 14/07/2003 Grant date: 13/02/2009 Expected Expiry Date: 14/07/2023 225350</td>
</tr>
</tbody>
</table>
Medicinal Herb Briefs: *Zingiber officinale*

And *Zingiber angustifolia*

Which Are Useful in Reducing Inflammation and Peripheral Pain

Assignee: Indena S.p.A.

Priority Date: 26/07/2010

Status: Published: 05/07/2013

Title: Herbal composition for a beverage with antioxidant properties

Inventor: Gada, Samatbhai Popatbhai

Filing Date: 04/03/2014

Status: Published: 30/10/2015

Title: Compositions for treatment of cancer-related fatigue

Assignee: Indena S.P.A.

Priority Date: 27/07/2012

Status: Published: 12/06/2015

Title: A novel herbal multi-purpose pain relief composition

Inventor: T. V. V. S. R. Varma

Priority Date: 27/07/2012

Status: Published: 28/04/2017

Title: Novel dietary supplementary immune system stimulator formulation and method of preparation thereof

Inventor: Dr. Abdulsubahan Abdul Rahma

Filing Date: 12/01/2016

Status: Published: 14/07/2017

Title: Endosymbiotic pathogenic archaea in chronic diseases and treatment with natural antioxidant antibiotics derived from crude plants extracts

Inventors: Ravikumar Kurup, Parameswara Achutha Kurup,

Filing Date: 09/05/2016

Status: Published: 10/11/2017

Title: Herbal composition with anti-inflammatory, analgesic, anti-pyretic properties for alleviation of arthritis and gout and method thereof

Inventor: Chikane, Hiraman Baban

Filing Date: 09/09/2016

Status: Published: 06/09/2019

Title: An antipyretic herbal composition

Inventor: Jitendra Awasthi

Filing Date: 20/02/2017

Status: Published: 24/08/2018

Title: Medicinal composition derived from multiple plant sources for gastrointestinal disorder

Inventor: Antony, Benny

Filing Date: 29/03/2017

Status: Published: 05/10/2018

Title: Herbal composition for therapeutic management of asthma and process of preparation thereof

Inventor: Dhaneshwar Mahato

Filing Date: 17/04/2017

Status: Published: 26/10/2018

Title: Formulations for the treatment of disorders of the mouth, throat and respiratory tract

Inventor: Mehta Raman

Priority Date: 10/06/2015

Status: Published: 23/02/2018

Title: Methods and compositions for treating non-small cell lung cancer
Medicinal Herb Briefs: Zingiber officinale

(Regional Research Laboratory, Jammu)

Filing Date: 06/10/2000
Grant date: 22/03/2006
Status: Patent Ceased on 07/10/2019

242831
Title: An anti-microbial composition
Assignee: The Quigley Corporation
Priority Date: 06/02/2002
Grant date: 17/09/2010
Status: Patent Ceased on 20/12/2010

188/DEL/2004
Title: A herbo mineral preparation for general immunity and strengthening the body of children
Assignee: Central Council for Research in Ayurveda and Siddha
Filing Date: 11/02/2004
Publication date: 29/12/2006
Status: Patent application refused for grant

1249/MUM/2006
Title: Synergistic herbal anthelmintic composition
Assignee: Advanced Enzyme Technologies Limited
Filing Date: 07/08/2006
Published: 31/10/2008
Status: Patent Application Withdrawn u/s 11(B)(4)(i)

2736/DEL/2009
Title: A herbal composition for inflammatory disorders
Assignee: Himalaya Global Holdings Limited
Filing Date: 30/12/2009
Publication date: 08/07/2011
Status: Withdrawn/ Abandoned

2863/DELNP/2009
Title: Compositions and methods for treating infectious bronchitis
Assignee: The Quigley Corporation
Priority Date: 14/12/2006
Publication date: 19/06/2009
Status: Withdrawn/ Abandoned

1568/MUM/2010
Title: A composition for treatment of osteoarthritis and other painful, inflammatory musculoskeletal disorders
Assignee: Enovate Biolife Private Limited
Filing Date: 18/05/2010
Publication date: 17/08/2012
Status: No updates on Indian patent site

22/DEL/2010 (No link on WIPO site)
Title: Herbal composition for diarrhoea
Assignee: Himalaya Global Holdings Ltd
Filing Date: 05/01/2010
Publication date: 08/07/2011
Status: No update on Indian patent site

2716/DEL/2011
Title: A novel ayurvedic formulation for the treatment of cough and other associated symptoms
Assignee: Akums Drugs & Pharmaceuticals Limited
Filing Date: 20/09/2011
Publication date: 22/03/2013
Status: Abandoned u/s section 21(1)

823/DEL/2011
Title: Ayurvedic formulation for the management of gout and related symptoms
Assignee: Akums Drugs & Pharmaceuticals Limited
Filing Date: 24/03/2011
Publication date: 19/10/2012
Status: Abandoned u/s section 21(1)

607/CHE/2012
Title: A nano-herbomineral composition and process of preparation thereof for treatment of allergic and bronchial
<table>
<thead>
<tr>
<th>Title</th>
<th>Inventor</th>
<th>Filing Date</th>
<th>Publication Date</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>A herbal formulation and method of preparation thereof for treatment of thyroid and neurological disorders</td>
<td>Dwibhashyam Venkata Sreeramamurty</td>
<td>20/02/2012</td>
<td>30/03/2012</td>
<td>Abandoned</td>
</tr>
<tr>
<td>Novel immunostimulant herbal composition; method of preparation of the same and use thereof</td>
<td>Dr. Manish A. Rach</td>
<td>18/05/2012</td>
<td>03/01/2014</td>
<td>Abandoned</td>
</tr>
<tr>
<td>A novel formulation for anti inflammation containing curcumin and ginger</td>
<td>Plant Lipids Private Limited</td>
<td>25/08/2015</td>
<td>03/03/2017</td>
<td>No Request for Examination Filed. Appears Abandoned</td>
</tr>
<tr>
<td>Production of ayurvedic preparations from hers for treatment of liver cancer</td>
<td>Arun Kumar</td>
<td>13/09/2016</td>
<td>03/03/2017</td>
<td>No request for examination filed, appears Abandoned</td>
</tr>
<tr>
<td>A herbal composition, and implementations thereof</td>
<td>ITC Limited</td>
<td>30/03/2018</td>
<td>04/10/2019</td>
<td>Appears Abandoned</td>
</tr>
</tbody>
</table>

Other references

2. Background information

About TFORD-COVID19
The Principal Scientific Advisor to the GoI, Dr K VijayRaghavan, has constituted a S&T Core Group on COVID19. Under the aegis of the S&T Core Group on COVID19, a Task Force has been constituted focused on Repurposing of Drugs for COVID19 (in short “TFORD-COVID19”). The Task Force is being coordinated by Dr V Premnath, Head, NCL Innovations at CSIR-NCL and Director, Venture Center and Dr Anurag Agarwal, Director, CSIR-IGIB. The Nerve Center for the Coordination is located be at Venture Center, Pune (located in the campus of CSIR-NCL).

Credits
Editors: Dr. Priya Nagaraj & Dr Smita Kale; Contributors: Dr. Priya Nagaraj, Dr.Vidula Walimbe, Dr. Smita Kale, Dr. Kirtee Wani, Dr. Tejas Shah, Dr. Swati Joshi, Dr. Manisha Premnath, Dr. Premnath V; Information also contributed by Dr Gopakumar Nair, GNAS and GnanLex.

About Advisory Group
The Nerve Center at TFORD-COVID19 has constituted an inter-disciplinary Advisory Group. This Advisory Group reviews the information compiled by the Nerve Center, provides suggestions on data, information sources, organization of data etc. while also providing inputs to refine the analysis and create a structured information base to support decision-making. The Advisory Group also provides expert input and opinions on certain selected points where experience-based inputs are needed. The members of the Advisory Group for each Discussion Paper are listed at [https://nclinnovations.org/covid19/teams/](https://nclinnovations.org/covid19/teams/).

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