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Pharmacist-initiated management of antiretroviral therapy (PIMART) – a win for South Africa

Natalie Schellack

Sub-Saharan Africa has the world's largest HIV epidemic, accounting for 70% of the global human immunodeficiency virus (HIV) disease burden with one in every twenty adults (5%) infected yearly. More specifically, South Africa currently has 8.2 million people living with HIV/acquired immunodeficiency syndrome (AIDS). Every year, at least 200 000 people are added to this population. While South Africa has made great strides in the provision of treatment with more than five million people on treatment, with the largest national HIV programme in the world, it has yet to reach the Joint United Nations Programme on HIV/AIDS (UNAIDS)'s 95-95-95 strategy, to ensure that 95% of persons living with HIV and Aids (PLWA) are aware of their status, 95% of these individuals are on treatment, and 95% of those on treatment are virally suppressed.

Following the World Health Organization's (WHO) policy recommendation of 'universal' access to antiretroviral therapy (ART), South Africa was among the first African country to adopt the policy and has officially been implementing the policy since September 2016 (National Department of Health, 2016). Achieving the Joint United Nations Programme on HIV/AIDS (UNAIDS)'s 95-95-95 strategy would require intense domestic and international financial investments, massive social mobilisation, and commitment from all levels of government, professional bodies, and civil societies.

Have we reached this yet? At the 11th SA AIDS Conference in June 2023, Health Minister Joe Phaahla said that 94% of people with HIV in SA knew their status, but only 77% were on antiretroviral treatment. Integral to understanding this challenge is the healthcare worker shortages that South Africa faces, with shortages of doctors and other healthcare professionals, particularly in rural and under-resourced areas where the need for health care is often greatest.

Considered within the ethical framework of utilitarianism, "a consequentialist theory that determines morality based on the outcomes of interventions. The principle of utility asserts that the moral course is one that maximises value over disvalue and seeks the greatest benefit for the greatest number". South Africa and its healthcare workers are compelled to provide the greatest benefit (of scarce resources, in this case ARVs) for the greatest number. On an individual level of benevolence, the benefit of access to a scarce resource should be considered a morally acceptable choice.

Pharmacist-initiated management of antiretroviral therapy (PIMART) was approved by the South African Pharmacy Council (SAPC) in 2021, with the aim of improving access to antiretroviral therapy, inherently practising distributive justice through egalitarianism (reducing inequalities of distribution), sufficientarianism (maximising the numbers of those who have enough), and prioritarianism (giving priority to those who are in more unfavourable circumstances) – thus making ARVs accessible to diverse communities, enabling better viral suppression and long-term disease management.

Why was PIMART initiated? In 2017, despite programmes such as nurse-initiated management of antiretroviral therapy (NIMART) and treatment points through other clinicians, the insufficient capacity of the then current workforce tasked with the management of HIV became apparent as the nation kept missing targets and HIV-related deaths contributed a large number of national mortalities.

Against this background, the SAPC was approached by the National Department of Health (NDoH) to consider and implement an intervention that would ensure that patients have increased access to antiretroviral medicines for the purposes of providing pre-exposure prophylaxis (PrEP) and post-exposure prophylaxis (PEP) to arrest the rising number of HIV infections. The NDoH proposed at the time that the SAPC, as the regulator of pharmacists, petition the South African Health Products Regulatory Authority (SAHPRA) to potentially down-schedule certain medicines indicated for the treatment of HIV, for the purposes of PrEP and PEP. The motivation was to down-schedule such medicines to Schedule 2, as this would enable pharmacists to prescribe and dispense such medicines without a prescription by another authorised prescriber, as part of PIT in terms of Sections 22A(5) and 22A(6) of the Medicines and Related Substances Act, 101 of 1965 (Medicines Act).

Having considered the options, the SAPC resolved that the most appropriate approach would be to expand the already existing pharmacist-initiated therapy (PIT) intervention, together with supplementary training that focused on PIMART. Once a pharmacist had undergone such supplementary training, they would be required to apply for a PIMART permit issued by the Director General: Health, in terms of Section 22A(15) of the Medicines Act. This would legally enable such pharmacists to prescribe and dispense ART medicines for PrEP, PEP and, where appropriate, first-line ARV therapy. Factors



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which motivated the need for supplementary training, as opposed to a blanket down-scheduling of the identified medicines, included training that would emphasise the distinction and limitations that would be necessary for a pharmacist to treat comprehensively as part of PIT, or refer a patient to the most appropriate healthcare practitioner when necessary.

The Independent Practitioners Association Foundation (IPAF) filed an application in the North Gauteng high court in February 2022, seeking review and dismissal of the SAPC's decision to implement PIMART through the publication of a Board Notice, which detailed the PIMART scope of practice, the competency standards the PIMART pharmacist would be required to have and the criteria for the approval for a PIMART supplementary training course. The implementation of PIMART was put on hold by the legal challenge of the IPAF, which represents doctors in private practice. The IPAF leveraged this challenge based on their preconceived idea that pharmacists would be encroaching on the domain of doctors and asked the Court to set aside the SAPC's decision to introduce PIMART into the scope of practice of suitably trained pharmacists. Further to this in its application, the IPAF argued that the provision of PIMART services falls within the domain of medical doctors and that pharmacists do not have the required training and competencies to provide these services. The IPAF further argued that the SAPC does not have the legislative mandate to introduce PIMART, that the SAPC's reasons for implementing PIMART were not adequately explained, and that the SAPC's procedures for implementing PIMART were not procedurally fair and did not provide adequate opportunity for interested parties to comment.

What was the collateral damage of this legal challenge from the IPAF, when the NDoH requested pharmacists to collaborate with other healthcare workers (HCWs) in meeting the UNAIDS goal, and in 2021, when the PIMART board notice was published? HIV-cases in South Africa increased by 910 000 persons, from 7,32 million to 8,23 million PLHIV. On average, 227 500 new infections occurred every year during this period alone. According to data from the Department of Home Affairs and Statistics South Africa, HIV remains one of the top five underlying causes of all natural deaths in South Africa. This crisis has been worsened by less-than-optimal adherence rates (estimated at between 63–83% [Moosa et al. 2019]) and a lack of access to testing and treatment services.

The financial collateral damage of the delay in providing equal access to antiretrovirals, is the HIV budget which has grown exponentially over the years. The NDoH spent more than R20 billion on HIV alone in the fiscal year 2019–2020 (NDoH Annual Report, 2019/2020) – more than any other disease that existed before the novel coronavirus (COVID-19).

It is important to note that the initiation of PIMART is not unique to South Africa. Pharmacists in South Africa have been providing PIT across the health spectrum and most HIV/Aids healthcare services for as long as any other personal healthcare worker (HCW) group has. For instance, patients may access HIV testing, and emergency post coital contraception, pregnancy testing, urine test analysis, patient wellness in respect of sexual health. In addition, occupational post-exposure HIV prophylaxis for healthcare workers at the pharmacy, in line with Primary Care Drug Therapy algorithms (first introduced in 1995). As such, PIMART adds to these services by allowing pharmacists to provide PEP and PrEP as well as dispense

first-line ART to uncomplicated and non-immunocompromised HIV-positive persons.

Internationally various countries are managing HIV and Aids by utilising all their health workforce, including pharmacists to make an impact on the global efforts to combat HIV and Aids. The following countries, amongst others, have programmes similar to PIMART.

- United States of America has a programme called Pharmacist-Administered, Antiretroviral Therapy Adherence Clinic that offers initiation or re-initiation, management of ART and adherence, monitoring of adverse reaction.
- Within Africa, Nigeria has a programme called Global HIV/AIDS Initiative Nigeria (GHAIN) which offers screening, testing, initiating and management of ART.
- Malaysia has a programme called Pharmacist Independent Prescriber that allows pharmacists to assess and then proceed with the initiation and management of ART and adherence monitoring.

The judgment in the IPAF case was handed down by Judge Elmarie van der Schyff on 14 August 2023 — almost two years after legislation introducing PIMART was published by the SAPC (Board Notice 101 of 2021 was published on 13 August 2021). While PIMART has been delayed for two years by the IPAF's legal challenge, Judge Van der Schyff's judgment included amongst others the following:

- Regarding encroaching on the medical doctors domain – *“competition, per se, does not limit or curtail the rights of medical practitioners to continue providing the services that they currently provide,”* further stating that *“even if the assumed competition is regarded to affect family practitioner's rights adversely, the alleged adverse effect it holds for medical practitioners has to be considered against the need to expand primary healthcare services aimed at preventing and treating HIV”*.
- The IPAF's argument that the SAPC is not mandated to introduce PIMART was dismissed by Judge Van der Schyff stating that *“the SAPC is empowered to prescribe the scope of practice of the various categories of persons registered in terms of the Pharmacy Act”*. She added, *“The development and implementation of PIMART does not expand the existing scope of practice of pharmacists that generically provide for PIT [pharmacist-initiated therapy] and PCDT [primary care drug therapy]. It introduced a specialised category of PIT and PCDT focused on preventing and treating HIV”*.
- The IPAF's arguments that the introduction of PIMART was procedurally unfair and the decision for its implementation was not properly explained, arbitrary, or capricious, were also rejected by Judge Van der Schyff. She said that *“...through its collaboration with the Southern African HIV Clinicians Society, whose members include numerous medical doctors, the development of PIMART was given great exposure”*.
- She also stated, *“The need to widen access to first-line ART [antiretroviral therapy] and TPT [TB preventative therapy] on a community level is not a figment of SAPC's imagination, but a dire need that is also evinced in other countries”*.
- The IPAF's contention that pharmacists are not adequately trained to provide PIMART was also rejected by Judge Van der Schyff stating, *“The PIMART training course was developed to ensure that pharmacists who successfully completed the training would be ‘suitably qualified to safely and effectively assist in providing ART’”*. She adds that *the PIMART training course was*

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In a world where health-conscious individuals are increasingly seeking natural alternatives and remedies for maintaining their well-being, Silverlab's ionic+ Colloidal Silver Nasal Spray has emerged as a promising solution for various nasal conditions. It targets the cause of conditions, not just the symptoms.

Harnessing the power of colloidal silver, this innovative product aims to provide relief and support for those dealing with nasal discomfort, nasal congestion, and related issues. This article explains the benefits of Silverlab's ionic+ Colloidal Silver Nasal Spray in managing nasal conditions and shedding light on its potential as a natural remedy.

Colloidal silver is a suspension of positively charged ionic silver particles in a liquid base. It has been used for centuries as a natural remedy due to its purported antibacterial, antiviral, antifungal and anti-inflammatory properties. In recent times, colloidal silver has gained renewed attention for its potential in supporting immune health and alleviating various health issues, with research being ongoing.

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Benefits for Treating Nasal Conditions

- **Nasal Congestion Relief:** One of the primary benefits of Silverlab's ionic+ Colloidal Silver Nasal Spray is its potential to provide relief from nasal congestion. The antibacterial and anti-inflammatory properties of colloidal silver are believed to help combat harmful germs and reduce inflammation respectively. Seeing that infection and inflammation may contribute to congestion, Silverlab's Nasal Spray helps to open up nasal passages and ease breathing.
- **Supporting Immune Health:** Colloidal silver has been suggested to possess immune-boosting properties. By reducing the microbial load in the nasal passages, the Nasal Spray may contribute to a healthier immune response, aiding in the prevention of recurrent nasal infections.



- **Sinus Health:** The Nasal Spray may also offer support for sinus health. Sinusitis, characterised by inflammation of the sinus cavities, can lead to nasal congestion, discomfort and pain. The antimicrobial properties of colloidal silver may help reduce the growth of harmful microbes in the sinuses, potentially alleviating symptoms associated with sinusitis.
- **Allergy Symptom Relief:** Allergies often result in nasal irritation, sneezing, and congestion. The use of Silverlab's ionic+ Colloidal Silver Nasal Spray could provide a natural option for managing allergy-related nasal symptoms by potentially reducing the allergic response in the nasal passages.
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‘developed by suitably qualified experts in the field, which experts include medical practitioners’.

It is important to realise that PIMART will not be free. Pharmacists will be able to charge the single exit price for the medicine plus a professional fee, as set by the SAPC. The cost of treatment in the private sector, therefore, could be a barrier to people who use government facilities. Despite having to pay for the medicine, the hidden expenses of getting treatment, such as travelling to a government facility and waiting in line, add considerable cost to treatment, which could make getting medicines at a private pharmacy attractive. In future, these costs may be mitigated by public-private sector models, for example the National Immunisation Programme that provides free childhood vaccines to both private and public institutions. This intervention (private/public partnership) in South Africa, through routine childhood immunisation, is reported to avert an estimated 2.5 million deaths annually. We hope to see the same results through this partnership with ARVs.

Pharmacists that were successful in completion of their supplemental training must apply for a PIMART permit in terms of Section 22A (15) of the Medicines and Related Substances Act, 101 of 1965 from the Department of Health.

In addition to the acts and services which form part of the scope of practice of the pharmacist as prescribed in terms of Regulations 3 and 4 of the Regulations relating to the practice of Pharmacy (GNR 1158, published on 20 November 2000), a pharmacist who has completed the PIMART supplementary training, and once they are in possession of a PIMART permit in terms of Section 22A(15) of the Medicines and Related Substances Act, 101 of 1965, may be allowed

to perform consultations and provide the relevant treatment to the patients at a pharmacy or in an approved primary healthcare setting.

PIMART is a victory for South Africa, as health care through pharmacies is typically more accessible from people’s homes, schools, and workplaces, has better opening hours than clinics and general practitioners and can provide greater anonymity to their patients. HIV/AIDS has no preference to demographics, however visiting a pharmacist to access treatment for an uncomplicated case may not only be destigmatising, but may reduce the cost incurred by transport, amongst other things, from the pharmacist to the GP. Thus, by making ARVs accessible to diverse communities, there will be better viral suppression and long-term disease management. Having said that men and adolescents face unique challenges in accessing HIV-testing and treatment, we hope that PIMART may provide a destigmatising environment, in public and private healthcare settings.

PIMART may also help scale up PrEP and PEP usage for adolescents, and young women who seek emergency contraception in private pharmacies in South Africa. Besides seeking emergency contraception, young women commonly visit pharmacies for family planning services and to vaccinate their infants and young children, which provides further opportunities to discuss and offer PrEP.

PIMART is designed to foster collaboration with other healthcare professionals (including nurses and doctors) in the provision of HIV care that is aimed at increasing accessibility to prevention and treatment in line with the national treatment guidelines. Having the pharmacist on board as part of the healthcare team, therefore reaching more patients, is a win for all.

Don't let asthma symptoms interfere with activities of daily living

Stephani Schmidt
Amazeza Information Services

Asthma affects millions of people, of all ages, globally. Although there is no cure for asthma, asthma can be controlled with appropriate treatment allowing the person to lead a normal life. However, many people are still under-diagnosed and despite the availability of effective treatment, many are still under-treated. The number of asthma deaths in South Africa are among the highest in the world.

What is an asthma attack?

During an asthma attack, breathing becomes more difficult due to:

- Bronchospasm (narrowing of the small airways in the lungs)
- Inflammation of the lining of the airways (lining becomes swollen)
- Excessive mucus production that clogs the airways (see Figure 1)

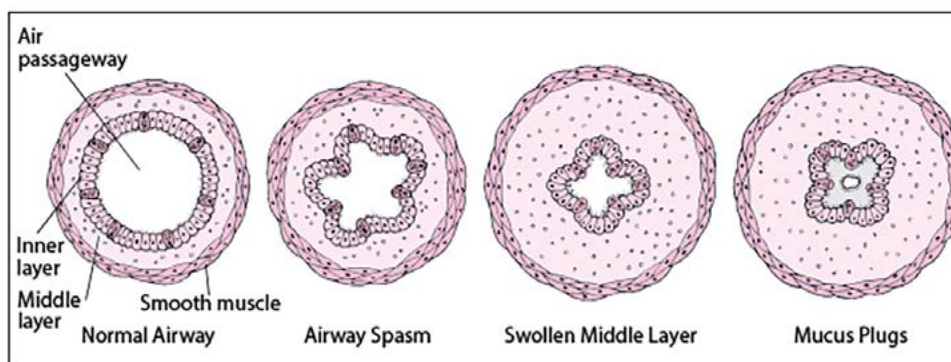


Figure 1: Narrowing of the airways

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Symptoms may include wheezing, shortness of breath, chest tightness and coughing. These symptoms can come and go over time and tend to vary (can be mild or severe) depending on the extent to which the airways in the lungs are constricted (narrowed).

Some people may experience worsening of symptoms (also called exacerbations or an 'asthma attack') if they are exposed to environmental irritants, allergens, or other triggers (Table I).

Table I: Common asthma triggers

- Allergens including dust, animal dander, mould spores, grass and tree pollens
- Non-specific irritants such as strong smells, fumes or perfumes, smoke, or chemicals
- Certain medications, for example, beta-blockers used to treat high blood pressure; aspirin or nonsteroidal anti-inflammatory drugs may cause exacerbations in people with aspirin-sensitive asthma
- Respiratory tract infections such as 'flu or the common cold
- Exercise
- Cold weather or changes in weather
- Emotional stress and anxiety
- Hormonal changes related to menstrual cycle. About 20 percent of women with asthma may have premenstrual worsening of asthma

Who is at risk?

The exact cause of asthma is not well understood, but it is probably caused by a combination of environmental and genetic factors. Risk factors for the development of asthma include:

- Having a personal or family history of atopic disorder such as asthma, eczema, allergic rhinitis, or allergies to food and medicine
- Being overweight or obese
- Exposure to events that could affect the development of lungs, for example, viral respiratory infections, prematurity, low birth weight
- Exposure to environmental allergens, irritants and air pollution

Other medical conditions such as allergic rhinitis, or gastro-esophageal (acid) reflux may make asthma symptoms worse. These conditions should be treated optimally.

How is asthma diagnosed?

To determine whether the symptoms are due to asthma or another medical condition presenting with similar symptoms, the doctor will perform lung function tests to diagnose asthma. Lung function tests are also used to determine severity and reversibility of airway obstruction, and for the monitoring and management of asthma.

How is asthma treated?

In most cases, asthma can be controlled by using inhalers which deliver the medicine directly into the lungs where it can work. There are two main types of medication, namely maintenance (“controllers”) and reliever therapies.

Maintenance therapies

Depending on the frequency of symptoms, the doctor may prescribe asthma medication to be used daily to reduce the frequency of symptoms (control symptoms) and reduce the risk of getting an asthma attack.

Inhaled corticosteroids (ICS)

ICS reduce inflammation (swelling) in the airways and are the cornerstone of asthma treatment.

ICS are sometimes combined with a long-acting bronchodilator such as formoterol which provides bronchodilation for 12 hours or longer. Inhalers containing an ICS-formoterol combination can be used on a daily basis as a controller and, if necessary, can also be used to provide quick relief of asthma symptoms (referred to as MART – ‘maintenance and reliever therapy’).

ICS are usually well-tolerated but can cause side-effects such as oral candidiasis (a fungal infection in the mouth that is also known as thrush), mouth and throat irritations and a hoarse voice. Patients can prevent getting oral thrush by gargling or rinsing their mouths with water immediately after using the inhaler. Alternatively, a spacer device could be recommended for a patient using a metered dose inhaler (MDI).

Reliever therapies

Short-acting bronchodilator (SABA)

SABAs (for example, salbutamol, fenoterol and terbutaline) provide quick relief of asthma symptoms and are also known as “quick relief” medicine, or “rescue” medications (Table II). SABAs work by relaxing the smooth muscles of small airways.

Table II: SABA inhalers available without a prescription

SABA	Examples, include but not limited to
Salbutamol	<ul style="list-style-type: none"> • Asthavent inhaler, Ecohaler • Glenbutate MDI • Venteze CFC free inhaler • Ventimax MDI • Ventolin CFC free inhaler; Accuhaler
Fenoterol	Berotec100 HFA MDI
Terbutaline	Bricanyl turbuhaler

However, it is important to note that while bronchodilators can relieve asthma symptoms, they do not reverse the inflammation in the airways. Due to the concern that regular SABA therapy could potentially mask deterioration, using a SABA alone is no longer recommended (the patient may think that he or she is getting better, while the airways become more swollen; this could then result in a severe asthma attack that could be life-threatening).

According to the guidelines for the management of asthma for adults and adolescents and the Global Initiative of Asthma (GINA) guidelines (for patients older than five years), a low dose ICS should be used on each occasion that a SABA is used.

Possible side-effects associated with SABA include a rapid heartbeat (palpitations), fine tremor, nervousness, headache, and dizziness.

Oral corticosteroids

Oral corticosteroids are sometimes prescribed for a few days during an asthma attack to alleviate symptoms and to reduce inflammation in the airway.

Correct use of inhalers

There is a selection of inhaler devices available, for example, metered dose inhalers (MDI), breath-actuated metered-dose inhalers and dry powder inhalers.

Correct use of the inhaler device is crucial for optimal asthma control. Correct use of inhalers will ensure that the full dose gets into the lungs. If used incorrectly, some of the medicine will stay on the tongue or at the back of the throat.

Using a spacer device with a metered dose inhaler will allow for more medicine to get to the lungs (helps to improve delivery of medication). It is recommended for use in all ages, but especially for patients with inhaler-breathing coordination problems and for those having difficulty using an MDI.

Patient brochures on the correct use of inhaler devices can be downloaded from the Allergy Foundation South Africa’s (AFSA) via the following link: <https://www.allergyfoundation.co.za/patient-information/en/learn-how-to/asthma-inhaler-devices/>

When to consult a doctor

All patients should have an asthma action plan so that they know what to do should their asthma get worse, how to recognise an asthma emergency, and when to seek immediate medical care.

Patients should contact their doctor if they need to use their inhalers more often than recommended, are experiencing symptoms (wheeze, cough or tight chest) more frequently or if symptoms are getting more severe. This includes waking at night due to asthma

symptoms and finding it difficult to continue with normal activities (including exercise and doing sport).

Immediate medical care is needed if a patient has a severe attack (severe shortness of breath, difficulty in breathing [breathing in hard and fast] and finding it difficult to talk or eat) or if symptoms do not respond to treatment. In addition, those with a history of rapid deterioration need to seek immediate medical care when their asthma starts worsening.

Summary notes

- The aim of treatment is to ensure that asthma is well-controlled, so that the patient can live a normal life and continue with normal activities, including work, exercise, and sleep.
- Patients need to know:
 - How to recognise and avoid or minimise contact with potential asthma triggers, if possible (Table I).
 - Which medication is used to prevent symptoms and which medication is used to provide quick relief of asthma symptoms. Relievers should always be carried with them.
 - How to use their inhalers.
 - When to promptly seek medical treatment (have an action plan).

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Allergic Rhinitis

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Amazeza Information Services

Allergic rhinitis refers to inflammation of the nasal passages that can occur due to exposure to allergens. An allergen is a substance that is usually harmless to most people, but can cause an allergic reaction in a patient allergic to that substance. Allergic rhinitis, also known as hayfever, is therefore an allergic reaction that mostly affects the nasal passages. Allergic rhinitis is a condition that waxes and wanes over time and persists for life in many people. This article will discuss the symptoms, management, and treatment of allergic rhinitis.

Symptoms of allergic rhinitis

Symptoms of allergic rhinitis occur shortly after exposure to an allergen and can include the following:

- Sneezing
- Itchy runny nose
- Itchy watery eyes, often with a feeling of grittiness in the eyes, and puffy swollen eyelids
- Itchy ears and/or roof of the mouth
- Earache
- Nasal congestion (stiffness)
- Sore throat, hoarse voice and cough due to mucus dripping down the back of the throat from the nose
- Sinus pressure with facial pain
- Loss of smell and taste
- Snoring and mouth breathing

These symptoms may lead to insomnia (sleep disturbances), irritability, daytime tiredness, poor concentration, recurrent ear infections (in children) and recurrent sinus infection (in adults). Patients may also develop a dark discolouration below the eyes called "allergic shiners". Some patients with allergic rhinitis also have asthma and a flare of the allergic rhinitis can worsen asthma symptoms. Untreated allergic rhinitis can also increase the risk of developing asthma.

How to manage allergic rhinitis

The best way to manage allergic rhinitis is to avoid the triggers or allergens as far as possible. Some of the known triggers include:

- Tree, grass and weed pollens
- Dust mites
- Cockroach droppings
- Animal allergens (skin, fur, feathers, saliva)
- Spores from indoor and outdoor fungi and moulds
- Irritants such as strong perfume, hairspray, cigarette smoke, and exhaust fumes

Although it is not always possible to avoid these triggers, the following recommendations may help reduce exposure:

- Keep windows closed during high pollen periods and use air-conditioning at home and in vehicles
- Wear glasses or sunglasses when outdoors to protect the eyes
- Use "mite-proof" bed covers to control dust mites
- De-humidify rooms to control mould
- Wash hands after handling pets
- Minimise clutter and carpets and keep the number of soft toys in children's rooms to the minimum
- Manage cockroach infestations by removing food waste, cleaning dishes immediately, and using bait stations or getting pest control services to manage infestations

Where symptoms persist despite reducing exposure, patients may need to treat symptoms to improve their quality of life.

Treatment options for allergic rhinitis

Most important in treating allergic rhinitis, is to manage inflammation. Using cortisone nasal sprays ensure that inflammation is treated locally. Nasal corticosteroids are widely used and are regarded as safe and effective in controlling symptoms of rhinitis. However, if used incorrectly, corticosteroids can have side effects. It is essential that patients are taught the correct techniques for administering nasal steroids and understand complications that can result from nasal steroid use. Nasal cortisone also reduces the risk

New

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patients beat their
worst nasal symptoms.

Recommend Otrivin Plus
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ipratropium bromide and 0,5 mg
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for symptomatic relief with¹:

- BLOCKED NOSE
- RUNNY NOSE
- SINUS PRESSURE

3 IN 1



Reference: 1. OTRIVIN PLUS Nasal Metered-dose Spray (Solution) package insert February 2021.

S2 OTRIVIN PLUS Nasal Metered-dose Spray (Solution). Each 1 ml contains 0,6 mg of ipratropium bromide and 0,5 mg of xylometazoline hydrochloride. (Preservative-free). Reg. no.: 46/16.1/0819.

Applicant: GlaxoSmithKline Consumer Healthcare South Africa (Pty) Limited, 39 Hawkins Avenue, Epping Industria 1, Cape Town, 7460
Company reg. no.: 2014/173930/07. For full prescribing information refer to the professional information approved by the medicines regulatory authority.

Always read label prior to use.

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Table 1: Treatment options available over-the-counter for allergic rhinitis

Active ingredient	Products	Comment	
Corticosteroid nasal sprays			
Beclomethasone	Beclate Aquanase [®]	Reduce nasal stuffiness and itchiness. Optimal efficacy seen after 7–14 days of continuous use. Effective for long-term use.	
Budesonide	Aeromide Nasal [®]		
Fluticasone	Flomist [®] Flonase [®]		
Mometasone	Monact [®] Nasonex [®] Nexomist [®] Rinelon [®] Zilfone [®]		
Oral sedating antihistamines			
Chlorpheniramine	Allergex [®] Rhineton	Reduce nasal itchiness and runny nose. Can cause drowsiness.	
Promethazine	Phenergan [®] Prohist [®]		
Oral non-sedating antihistamines			
Cetirizine	Acuzyr [®] Allecet [®] Allesoothe [®] Austell Cetirizine [®] Ceticit [®] Texa [®] Trantrin [®] Zelary [®] Zetop [®] Zyrtec [®]	Reduce nasal itchiness and runny nose. Associated with little or no drowsiness.	
Desloratadine	Acuhist [®] Adco-Desloratadine [®] Clarex 5 [®] Dazit [®] Deselex [®] Deseneeze [®] Neoclarityne [®] Neoloridin [®]		
Fexofenadine	Fexo [®] Pollofex [®] Telfast [®]		
Levocetirizine	Allerway 5 [®] Cetaway [®] Cetizal [®] Glencet [®] Levogex [®] Texamer [®] Xyzal [®]		
Loratadine	Allergex non-drowsy [®] AP Loratadine [®] Austell Loratadine [®] Cipla-Loratadine [®] Clarinese [®] Clarityne [®] Laura 10 [®] Lordyno [®] Lorfast [®]		
Rupatadine	Rupanase [®]		
Decongestants – nasal sprays			
Oxymetazoline	Drinasa [®] Paed nasal spray [®] Dristan long lasting vapour Drixine nasal spray [®] Iliadin [®] Nazene [®] Nazovin [®] Oxymist [®]		Do not use for long periods of time (maximum three to five days) to avoid rebound swelling.

Phenylephrine	Adco-Naphensyl nasal spray [®] Adco-naphensyl drops [®] Universal nasal drops [®] ENT Nasal spray [®] (contains naphazoline as well)	Do not use for long periods of time (maximum three to five days) to avoid rebound swelling.
Xylometazoline	Otrivin [®] Oxymist [®] Sinutab nasal spray [®]	
Ipratropium bromide and Xylometazoline	Otrivin Plus [®]	
Oral decongestants in combination with antihistamines		
Pseudoephedrine HCl	Betafed [®] Decofed [®] Demazin [®]	Avoid use of decongestants in patients with high blood pressure, glaucoma or enlarged prostate.
Phenylephrine	Demazin syr [®] Respinol elixir [®]	
Oral decongestants in combination with analgesics		
Pseudoephedrine HCl	Benlylin for colds [®] Nurofen Cold and Flu [®] Sinugesic [®] Sinumax [®] Sinutab Sinus pain non-drowsy [®] Sudafed Sinus Pain [®]	Avoid use of decongestants in patients with high blood pressure, glaucoma or enlarged prostate.
Phenylpropanolamine	Sinuclear [®] Sinustat [®]	

of adverse events associated with oral cortisones. Nasal cortisones reduce nasal stuffiness and the symptoms of an itchy runny nose but should be used regularly and optimal relief is often only seen around two weeks after starting to use these nasal sprays.

Antihistamines can help reduce symptoms of an itchy, runny nose and sneezing but do not reduce nasal stuffiness. Although nasal sprays containing antihistamines are available, antihistamines are usually taken orally. Eye drops containing antihistamines can reduce symptoms of itching and eye irritation.

Oral decongestant medications (Table 1 - like pseudoephedrine or phenylephrine) help to relieve symptoms of congestion (stuffiness) in some people. However, this treatment is not usually recommended unless antihistamines and nasal corticosteroids do not improve symptoms. Decongestants can cause high blood pressure resulting in headaches, irritability, and insomnia. Decongestants are available in combination with antihistamines and/or analgesics. Decongestant nasal sprays should not be used for more than three to five days to prevent the occurrence of rebound swelling that can make symptoms worse.

It is important to always follow instructions on the manufacturers package insert. Also remember to ensure that there are no interactions between other medications that patients are using before recommending new treatment options.

Conclusion

Allergic rhinitis can have a severe impact on the quality of life of patients and although it cannot be cured, avoiding triggers and appropriate treatment can manage symptoms effectively. The first line of treatment involves the use of intranasal cortisone, usually as long-term treatment. Patients who do not respond to intranasal

corticosteroids used alone, may consider adding an oral antihistamine to reduce a runny, itchy nose. Combination products taken orally often contain combinations of antihistamines, decongestants and/or analgesics to provide relief of symptoms but should only be used short-term.

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Allergic Conjunctivitis

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Allergic conjunctivitis is a common eye condition that occurs when the conjunctiva, the clear membrane that lines the eyelid and covers the white of the eye, becomes inflamed in response to an allergen. The most common allergens that trigger allergic conjunctivitis are pollen, dust mites, pet dander, and mould. The pollens that cause symptoms vary from person to person and from area to area and people who suffer from allergic conjunctivitis often have a history of other allergic conditions. It is often associated with allergic rhinitis, atopic dermatitis (eczema), and/or asthma. Unlike conjunctivitis that is caused by bacterial infection, allergic conjunctivitis is not contagious, so it cannot be transferred from one person to another. It can also affect people of any age.

The symptoms of allergic conjunctivitis can vary from mild to severe and may include:

- Intense itching or burning
- Redness and widened blood vessels in the clear tissue covering the white of the eye
- Puffy eyelids and swelling, most often in the morning
- Watery eyes
- Stringy eye discharge
- Light sensitivity

Allergic conjunctivitis can be seasonal or perennial. Seasonal allergic conjunctivitis occurs during certain times of the year, such as spring when large amounts of certain allergens, e.g. tree pollens, are present in the air. Perennial allergic conjunctivitis occurs year-round and may be caused by allergies to dust mites or pet allergens.

The diagnosis of allergic conjunctivitis is usually made by the doctor, based on the patient's symptoms and medical history. In some cases, a doctor may perform a skin test to identify the specific allergen that is causing the reaction. Knowing what the cause is may help in preventing or lessening the effects of future episodes.

There is no cure for allergic conjunctivitis, but the symptoms can be managed with treatment (See Table I). Treatment options include:

- Over-the-counter antihistamine and/or vasoconstrictor eye drops – these may be used for up to two weeks.
- Mast cell stabilisers/antihistamine eye drops are used by people with seasonal or year-round symptoms. These work best as a preventative treatment and are available without a prescription. They are fast-acting, effective, and well tolerated.
- Topical steroids are available on prescription only.
- Oral antihistamine tablets: non-sedating antihistamines are best for daytime use and are also mostly long acting while short-acting, sedating antihistamines can be taken at bedtime to reduce night-time itching.
- Using antihistamines can, however, cause negative side-effects like dryness of the eyes, nose, and mouth, and they can also cause blurred vision.
- Artificial tears on their own or in combination with antihistamine eye drops. These not only lubricate the eyes, but they help to rinse out the offending allergen. Preservative-free products are available for those who wear contact lenses or are allergic to preservatives often found in ocular preparations.

Remember most eye drops should not be used if contact lenses are being worn. Remove them first. Some antihistamine eye drops may cause the eyes to become dry which may then create the need for lubricating drops.

The following are some additional tips to help alleviate the symptoms of allergic conjunctivitis:




- Minimise exposure to pollen by staying indoors and keeping windows closed during peak allergy/pollen season.
- Avoid rubbing the eyes; rather use artificial tears or a cool compress. Rinsing eyes with cool water can also help to relieve symptoms when eye drops are not available.
- Keep the home clean and dust-free.
- Use an air purifier.
- Wear sunglasses to protect your eyes from pollen and other allergens when outside.
- Take an over-the-counter antihistamine before exposure to allergens.



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Multiple action¹

-  Rapid onset antihistaminic action¹
-  Long duration mast cell stabilising action^{1,4}
-  Prevents inflammatory cytokine production^{1,3}

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eye drops, solution)



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Itching ¹	Redness ¹	Lid swelling ¹	Tearing ¹	Chemosis ¹
				

References: 1. Rosenwasser LJ, *et al.* Mast cell stabilization and anti-histamine effects of olopatadine ophthalmic solution: a review of pre-clinical and clinical research. *Curr Med Res Opin* 2005;21:1377-1387. 2. IMS Health-MAT September 2021. 3. Patanol[®] Approved Professional Information, 11 November 2021. 4. Allergy: Choosing the right anti-allergic drop. *Ophthalmology Times* February 2010. Available at: <https://www.opthalmologytimes.com/modern-medicine-now/allergy-choosing-right-anti-allergic-drop>. Last accessed November 2021.

 PATANOL Eye Drops, solution. Contains 1.11 mg/ml olopatadine hydrochloride equivalent to 1 mg/ml olopatadine. 33/15.4/0189. Novartis SA (Pty) Ltd.

For full prescribing information, refer to the Professional Information approved by SAHPRA (South African Health Products Regulatory Authority).

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Table I: Eye drops for allergic conjunctivitis

Product	Active ingredient	Dosage	Contraindications	Warnings
Allergex Eye Drops (vasoconstrictor)	Oxymetazoline HCl and preserved with benzalkonium chloride	1–2 drops in the eyes morning and evening when required	Children under 6 years	Caution should be exercised in the use of benzalkonium-chloride-preserved topical medication over an extended period in patients with extensive ocular surface disease
Artelac Allergy Eye Drops (lubricant, relieves irritation and inflammation)	0.24% hyaluronic acid, 2% ectoin, sodium chloride, sodium hydroxide Preservative free	1–2 drops into the eye as needed No limit on duration of use	Hypersensitivity to any ingredient	*Do not touch the surface of the eye with the tip of the dropper *May cause temporary blurred vision after instillation
Gemini Sterile Eye Drops (antihistamine, vasoconstrictor)	Antazoline HCl, tetryzoline HCl, preserved with benzalkonium chloride	1–2 drops in the eye 4 hourly. If irritation persists for longer than 48 hours consult doctor	*Sensitivity to any ingredient *Patients with dry eyes *Patients using monoamine oxidase inhibitor type antidepressants *Children under 2 years	Caution should be exercised in the use of benzalkonium-chloride-preserved topical medication over an extended period in patients with extensive ocular surface disease
Oculerge Eye Drops (antihistamine, vasoconstrictor)	Antazoline HCl, tetryzoline HCl, preserved with benzalkonium chloride	1 drop 3–4 times daily or more into the lower eyelid	*Sensitivity to any ingredient *Patients taking monoamine oxidase inhibitor type antidepressants *Closed-angle glaucoma *Children under 6 years	Caution should be exercised in the use of benzalkonium-chloride-preserved topical medication over an extended period in patients with extensive ocular surface disease
Vividrin Eye Drops (mast cell stabiliser)	Sodium cromoglycate, preserved with benzalkonium chloride	1–2 drops into each eye 4x daily. Since therapy with sodium cromoglycate is essentially prophylactic, it is important to instruct patients to maintain regular dosage	Hypersensitivity to any ingredient	*Caution should be exercised in the use of benzalkonium-chloride-preserved topical medication over an extended period in patients with extensive ocular surface disease. *Where concomitant steroid and sodium cromoglycate treatment has rendered it possible to reduce the steroid dose, precautions must be taken to prevent a severe attack if/when sodium cromoglycate is withdrawn from the treatment regimen
Patanol Eye Drops (antihistamine, mast cell stabiliser and cytokine inhibitor)	Olopatadine HCl, preserved with benzalkonium chloride	1 drop into conjunctival sac of the affected eye/s twice daily	*Hypersensitivity to any ingredient	*Its use has not been studied in older patients or in patients with hepatic or renal impairment
		*Children over 3 years old same dose as adults	*Should not be administered while wearing contact lenses	*Caution should be exercised in the use of benzalkonium-chloride-preserved topical medication over an extended period in patients with extensive ocular surface disease
Relestat Eye Drops (antihistamine)	Epinastine HCl, preserved with benzalkonium chloride	Children over 9 years and adults 1 drop twice daily	Hypersensitivity to any ingredient *Should not be administered while wearing contact lenses	*Caution should be exercised in the use of benzalkonium-chloride-preserved topical medication over an extended period in patients with extensive ocular surface disease *Do not use for more than 8 weeks

Notes

*Remove contact lenses before administering drops containing preservatives

*Do not touch the eye with the tip of the dropper

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- SAMF 14th Edition pg 614-616
- SAMF 14th Edition pg 614-617
- SAMF 14th Edition pg 614-618

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<https://pi-pil-repository.sahpra.org.za/wp-content/uploads/2023/03/Professional-Information-Gemini-Sterile-Eye-Drop-Approved.pdf>

If the symptoms of allergic conjunctivitis cannot be managed with over-the-counter medication, see a doctor or ophthalmologist for diagnosis and treatment.

Here are some additional things to keep in mind about allergic conjunctivitis:

- The symptoms of allergic conjunctivitis can be similar to those of other eye conditions, such as bacterial conjunctivitis or viral conjunctivitis. It is important to see a doctor to get a correct diagnosis and treatment if symptoms persist.
- Allergic conjunctivitis can be a chronic condition that requires

ongoing treatment. However, the symptoms can usually be managed with the right treatment.

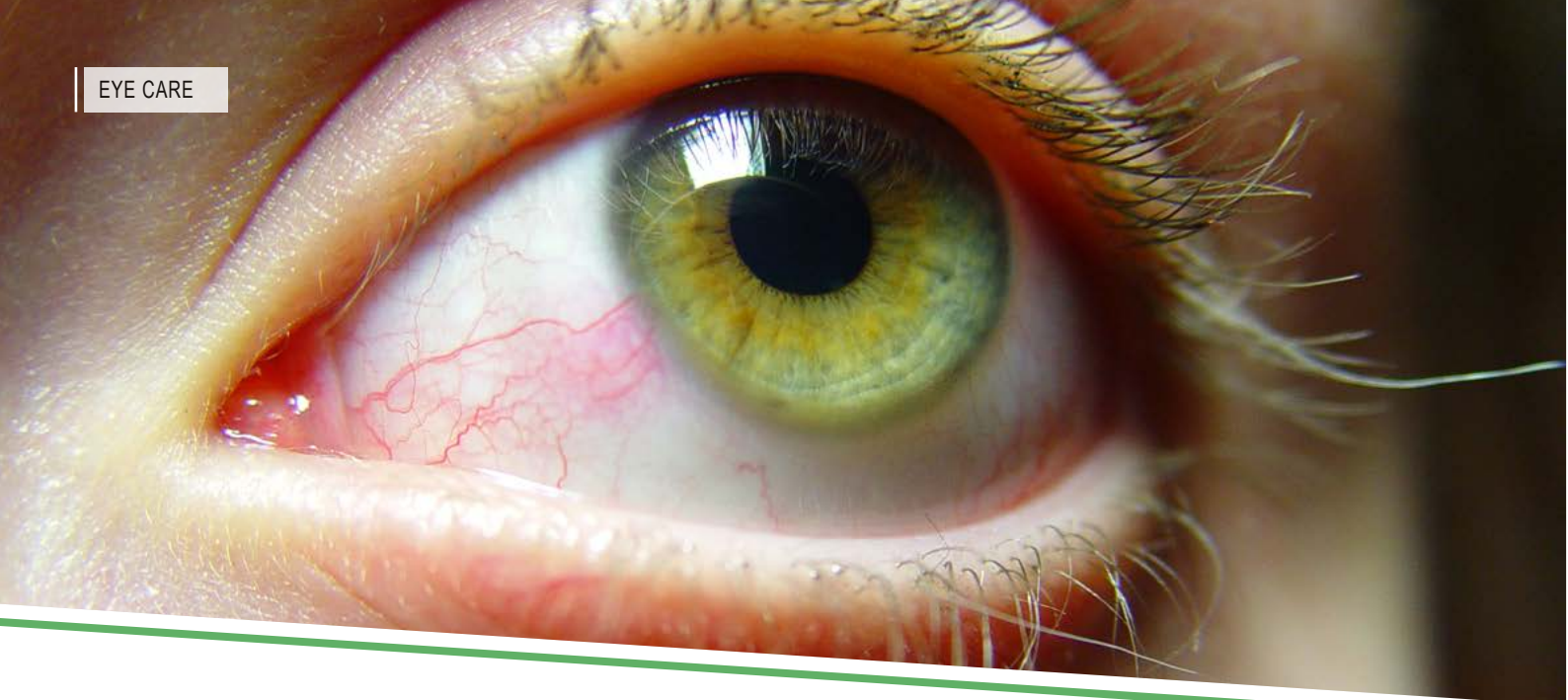
- If allergic conjunctivitis is not well managed, complications can occur such as dry eye, infection, and in rare cases, corneal scarring and keratitis.

If someone has allergic conjunctivitis, it is recommended that they see their doctor/ophthalmologist regularly to ensure that the condition is being managed properly and that any complications are detected early.

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Why is your eye dry?

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Introduction

Dry eye syndrome, also known as dry eyes, is a common condition that occurs when the eyes don't produce enough tears, or the quality of the tears is poor. Tears help lubricate and nourish the eyes. They also wash away foreign matter and keep the surface of the eyes smooth and clear. Without enough tears, the eyes can become dry, irritated, and inflamed. Dry eyes feel uncomfortable and may sting or burn and could even cause vision problems.

In certain situations, a person may be more prone to experience dry eyes, such as on an aeroplane, in an air-conditioned room, while riding a bike, spending time outside in windy areas or after looking at a computer screen for an extended period. Another reason for dry eyes can be an inadequate quality and quantity of tear production or when tear production and drainage are out of balance.

When there is inadequate amount of tear production, it could be attributed to age, various medical conditions or as a side effect of certain medications. Tears are made up of three layers, namely oil, water, and mucus. A smooth oil layer helps prevent evaporation of the water layer, while the mucin layer spreads the tears evenly over the surface of the eye. Poor quality of tears occurs when one of the three layers develops a deficiency.

Types of dry eye disease

There are three types of dry eye disease.

- **Aqueous deficient dry eye:** This is when the eyes don't produce enough tears. The lacrimal gland (in the upper, outer corner of each eye) produces the aqueous tears. These tears make up the middle, watery layer of the tear film. Some autoimmune conditions like Sjogren's syndrome and rheumatoid arthritis can cause inflammation in the lacrimal gland and prevent it from producing enough aqueous tears.

- **Evaporative dry eye:** This is when the tears evaporate too quickly. One of the most common causes is meibomian gland dysfunction. This means the glands in the eyelids that produce the outer, oily layer of the tear film don't work properly. As a result, the oily layer is unstable and can't protect the watery layer from drying up.
- **Mixed dry eye:** Some people have aqueous tear deficiency and tear instability. This means the eyes don't produce enough tears, plus the tear film is unstable.

Some people are more prone to getting dry eyes than others. For example, older adults, women, and people wearing contact lenses are likelier to experience dry eyes.

Causes

The causes of dry eyes can be multifactorial, but some common ones include:

- Ageing – dry eyes are a part of the natural ageing process, and many people over 65 experience the symptoms of dry eyes.
- Hormonal changes during pregnancy or during and after menopause can cause dry eyes.
- Environmental factors such as dry air (weather-related or because of air-conditioning), wind, and pollution like smoke.
- A diet low in vitamin A (found in liver, carrots and broccoli) or omega-3 fatty acids (found in fish, walnuts and vegetable oils) is also a risk factor for experiencing dry eyes.
- Medical conditions such as diabetes, autoimmune disorders, and thyroid problems.
- Certain medications such as antihistamines, decongestants, diuretics, certain heart medications, birth control pills, tranquilisers, and some antidepressants.

Symptoms

Symptoms of dry eyes can vary, but common ones include:

- A stinging, burning, gritty or scratchy sensation in the eye often accompanied by the feeling of something in the eye
- Redness and irritation in the eyes

TRANSFORMING THE TREATMENT OF DRY EYES

Xailin Ophthalmic Eye Range



1 Xailin Fresh 30 x 0.4 ml¹

Daily, single-dose solution for soothing and lubricating dry, red and irritated eyes.¹

- ◆ Preservative free¹
- ◆ Single dose units¹
- ◆ Sterile until opening¹



2 Xailin Hydrate 10 ml²

Lubricate and protects the eyes and provide **immediate relief** of dry eye sensations.²

- ◆ Preservative-free (in the eye)²
- ◆ Multidose drops²
- ◆ Sterile for 28 days after opening²



3 Xailin[®] Plus 0.2 % HA 10 ml³

Preventative eye drop that moisturises and alleviates dry eye symptoms due to **prolonged screen time, contact lens use or environmental factors.**³

- ◆ Preservative free³
- ◆ Sterile for 3 months after opening³



4 Xailin Gel 10 g⁴

Lubricate and protect the eye in certain eye conditions and provide long-lasting relief of dry eye sensations.⁴

- ◆ Preservative-free (in the eye)⁴
- ◆ Multidose eye gel⁴
- ◆ Sterile for 28 days after opening⁴



5 Xailin Night 3.5 g⁵

Provides strong soothing **night-time relief** of dry eye sensations. Acts as a barrier against moisture loss. **Ideal for use at bedtime.**⁵

- ◆ Preservative free⁵
- ◆ Multidose eye ointment⁵
- ◆ Sterile for 60 days after opening⁵



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Footnote: g – gram; w/v – weight per volume; w/w – weight per weight; *due to its specific physical, viscoelastic properties and the ability to adhere to the cornea, improves tear film stability and restores comfort of vision⁵

To report an Adverse Event, e-mail Adcock.AERReports@adcock.com or call 011 635 0134. To request a copy of the current approved package insert or references, e-mail: Helpdesk.MedicalAffairs@adcock.com

References: 1. Xailin Fresh Package Insert, VisuFarma February 2017. 2. Xailin Hydrate Package Insert, VisuFarma November 2016. 3. Xailin[®] Plus Package Insert, VisuFarma November 2021. 4. Xailin Gel Package Insert, VisuFarma November 2016. 5. Xailin Night Package Insert, VisuFarma December 2016.

For full prescribing information refer to the approved package insert. **Applicant:** Genop Healthcare (Pty) Ltd. PO BOX 3911, Halfway House, 1685, South Africa. Tel 0861 436 674. Co. Reg. No. 1984/0111575/07. www.genop.co.za. Marketed by Adcock Ingram Healthcare (Pty) Ltd. Reg. No. 2007/019928/07. Private Bag X69, Bryanston, 2021, South Africa. Tel +27 (00) 11 635 0000. www.adcock.com. 03/2023/PROMO/48.

Table I: Treatment options for dry eye syndrome

Drop	Dosage	Indications	Contraindications and warnings
Artelac® Advanced Lipids Eye Lubricant Drops	• 1 drop into the conjunctival sac 3–5 times daily or more frequently	• Suitable for aqueous-tear deficiencies, lipid deficiencies and mucin deficiencies • Preservative free	
Artelac® Intense Rebalance Eye Drops	• 1 drop into conjunctival sac 3–5 times daily or more frequently • Compatible with all types of contact lenses	• Multi-component product relieves symptoms caused by chronic tear dysfunction, such as burning and tired, gritty, red and/or inflamed, painful eyes • Preservative free	
Artelac® Moisture Eye Drops	• 1 drop into corner of the eye 3–5 times daily as needed • Suitable for use in children	• Keeps the surface of the eye moist when production of tears is less than normal • Preservative free	
Duratears® Eye Ointment	• Insert small ribbon of ointment in conjunctival sac, or affected area	• Useful as a lubricant for the eye	• Do not touch the tip of the tube or dropper to any surface • If ocular irritation persists, discontinue use
Rohto® Eye Drops Dry Aid™	• 1–2 drops into the affected eye as needed	• Mimics natural tears to restore natural tear film with long-lasting hydration and protection	• Remove contact lenses before use, apply drops and wait 15–20 minutes before wearing contact lenses again • For adults and children over 6 years old
Systane® Balance Lubricant Eye Drops	• May be used as needed throughout the day	• Dry-eye therapy for temporary relief of burning and irritation • May be used to treat dry eye associated with contact lens usage • Contains polyquaternium-1 as preservative	• The safety of use in pregnancy and lactation has not been established • Instil drops 10 minutes before inserting contact lenses and after removal of contact lenses
Systane® Ultra Lubricant Eye Drops	• 1–2 drops in the eye(s) as needed • Can be used while wearing contact lenses	• Dry-eye therapy for temporary relief of burning and irritation • Contains polyquaternium-1 as preservative	• The safety of use in pregnancy and lactation has not been established • Can be used while wearing contact lenses when minor irritation, discomfort or blurring occurs
Tears Naturale® II Ophthalmic Solution	• 1–2 drops as frequently as required	• An artificial tear treatment for both mucindeficient and aqueous-deficient dry eye conditions • Contains polyquaternium-1 as preservative	
optive Plus Eye Drops™	• 1–2 drops as frequently as required	• Triple-action formula that lubricates the surface of the eye and moisturises the ocular surface cells by restoring osmotic balance plus protecting natural tears with a lipid enhancement	• Allow 5 minutes between the administration of ophthalmic products
Xailin® Gel	• 1 drop 2–4 times a day	• Lubricates and protects the eye in certain eye conditions, and provides long-lasting relief of dry eye sensations • Preservative-free (in the eye)	• The safety of use in pregnancy or while breastfeeding has not been established
Xailin® Night (Ointment)	• Can be used as often as required	• Provides strong, soothing night-time relief of dry eye sensations; acts as a barrier against moisture loss; ideal for use at bedtime • Preservative free	• Not to be used if allergic to lanolin alcohols
Xailin Plus 0.2 % HA	• 1 drop in conjunctival sac 3–4 times per day	• Maintains and restores the condition of the eye surface for prompt and lasting relief from dry, irritated and tired eyes due to external factors • Preservative free	• Do not touch eye or any surface with the tip of the dropper
Xailin® Hydrate	• 1-2 drops 2–4 times per day	• Lubricates and protects the eyes, and provides immediate relief of dry eye sensations • Preservative-free (in the eye)	• The safety of use in pregnancy or while breastfeeding has not been established
Xailin® Fresh (vials)	• 1 drop 2–4 times a day	• Daily, single-dose solution for soothing and lubricating dry, red and irritated eyes • Preservative free	• Can be used on contact lenses
VisuXL®	• 1 drop into conjunctival sac of each eye 2 times per day	• Everyday solution for moderate to severe dry eye • Preservative free	• Can be used with contact lenses
VisuXL® Gel	• 1 drop into conjunctival sac of each eye 2 times per day	• A highly effective treatment in case of: • Moderate to severe dry eye; • Foreign body trauma; • Alterations in the continuity of the corneal and conjunctival surfaces after refractive corneal surgery and corneal transplant • Preservative free	• Can be used with contact lenses
VisuEVO®	• 1 drop into conjunctival sac of each eye 3 times per day	• For all forms of evaporative dry eye, to improve the stability of the lipid layer by reducing the evaporation of the aqueous phase, i.e. the tear film • As a pre-treatment for eye surgery • Preservative free	• Can be used with contact lenses

Note: Always shake the drops before use, and to avoid contamination, never touch the dropper tip of the container to any surface

- Sensitivity to light
- Watery or teary eyes
- Mucus that makes the eyes feel “glued shut” when waking up in the morning
- Blurred vision
- Eye fatigue or eyestrain that often feels worse late in the day
- Difficulty or discomfort when wearing contact lenses

Treatment options

Treatments for dry eyes focus on restoring or maintaining the normal amounts of tears required for comfort and maintaining eye health. The best treatment depends on the underlying cause and severity of the condition. Some treatments focus on reversing or managing a condition or factor causing dry eyes. Other treatments can improve the tear quality or stop the tears from quickly draining away from the eyes.

Some common treatments include:

- Artificial tears (eye drops or ointments that help lubricate the eyes)
- Prescription eye drops that help increase tear production or reduce inflammation
- Plugging the openings to the tear ducts with tiny silicone plugs (punctal plugs). These plugs close the tiny opening (punctum) in the inner corner of upper and lower eyelids. This closure conserves both your own tears and artificial tears added.
- Changes in lifestyle or environmental factors (such as using a humidifier, wearing protective eyewear, or taking breaks from screen time)

Contact lens wearers should select preservative-free preparations.

There are also some steps a person can take to avoid getting dry eyes:

- Blink frequently when using a computer or other digital devices.
- Use a humidifier to add moisture to the air.
- Wear protective eyewear, such as wraparound glasses, when outside on windy or dry days.
- Take breaks from screen time and focus on objects at a distance.
- Avoid smoking and exposure to second-hand smoke.
- Eat a healthy diet rich in omega-3 fatty acids, which are essential for eye health.

Table I summarises some treatment options for dry eye syndrome. Often therapy requires an individual dosage regimen according to the severity and intensity of the symptoms experienced.

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The use of probiotics in the prevention of candidiasis

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Abstract

Probiotics are living microbial adjuncts that improve health and prevent disease by restoring the balance of intestinal flora. Their use holds many advantages due to the fact that they do not induce microbial resistance, are non-toxic, and stimulate the immune system. Probiotic products can contain one or more microbe, of which the most commonly used are *Lactobacillus* and *Bifidobacterium* species, while others contain *Saccharomyces boulardii* (*S. boulardii*).

Probiotics have many clinical uses, one being the treatment of *Candida* infections. When suggesting a probiotic to a patient, the pharmacist's assistant (PA) can play an important role, providing that he/she has the necessary background knowledge regarding probiotics. This paper attempts to provide the PA with such knowledge.

Keywords: *Bacillus* spp, *Candida albicans*, *C. albicans*, candidiasis, *Lactobacillus* spp, probiotics, *Saccharomyces boulardii*, *S. boulardii*, yeast infections, vaginal thrush

Introduction

When the harmony of resident microbiota (different microorganisms) in the oral cavity, gastrointestinal tract (GIT), and genitourinary tract, is imbalanced, an environment is created that may lead to an increase in the growth of opportunistic microorganisms, such as those of the genus *Candida*.¹ *Candida* infections are the most frequently isolated pathogenic fungi of human fungal infections.

This is where the use of probiotics has been found to be most valuable. Probiotics are defined as live microorganisms which, when administered in adequate amounts, hold benefits for the host.²

Probiotics promote the reestablishment of the natural microbiota with advantages over conventional antifungal agents in that they do not induce microbial resistance, are non-toxic, and stimulate the immune system.¹

Increasing fungus resistance to antifungal agents provides an opportunity for the development of therapeutic and/or prophylactic alternatives that have a different and effective mechanisms of action and the ability to combat fungal infections without harming the patient. Probiotic bacteria provide such an alternative in the prevention and treatment of candidiasis and other infectious diseases. *Bacillus* spp, *Saccharomyces boulardii* (*S. boulardii*), and *Lactobacillus* spp. are examples of bacteria that have probiotic effects and are able to inhibit the microbial pathogenicity and restore the balance of resident microbiota.¹

What is meant by candidiasis?

Candidiasis is a multifaceted fungal disease caused by the yeast species of the genus *Candida*, of which the most prominent species is that of the genus *Candida albicans* (*C. albicans*). This commensal fungus colonises the vaginal and oral mucosa of healthy individuals and often becomes a pathogen (disease-causing organism) when there is an imbalance between the fungus, mucosa, and the host mechanism. This leads to the condition called candidiasis.³

Other diseases caused by *C. albicans* are vulvovaginal infections (also known as yeast infections or thrush), oral candidiasis and systemic bloodstream infections.

When looking at an example of a *C. albicans* infection, in this case an infection in the vagina, it is characterised by vulva erythema (redness), itching of the vulvovaginal region and the production of abnormal cheese-like or watery vaginal discharge.³ This occurs when the normal vaginal flora, mainly dominated by *Lactobacillus*, becomes imbalanced. *Lactobacillus* species are responsible for maintaining a slightly acidic pH by producing lactic acid, hydrogen peroxide and other inhibitory substances that inhibit the growth of yeasts and other pathogenic organisms, thereby promoting a healthy vaginal environment. When this equilibrium is disturbed and *Lactobacillus* species' population drops, it leads to a predisposition

of the vagina to infections (e.g. *Candida* vaginitis and Bacterial vaginosis). In an attempt to improve, restore, and maintain a healthy vaginal environment, the use of probiotics containing *Lactobacillus* species has shown promise.⁴

What are probiotics?

Probiotics are living (good) microbial adjuncts that improve health and prevent disease by contributing towards the balance of intestinal flora.⁵ Probiotics are live microorganisms (microbes) that have health benefits when used in adequate amounts. They consist of yeast or bacteria and are available as capsules, tablets, or powders. They are also found in various fermented foods, such as yoghurt.

Probiotic products can contain one or a mixture of microbes, of which the most commonly used include lactic acid bacteria (e.g. *Lactobacillus* and *Bifidobacterium* species) while others contain *Saccharomyces boulardii* (*S. boulardii*).⁵⁻⁷

How are probiotics classified?

Probiotics are classified according to genus, species and the type of strain.⁷

Firstly, bacteria are grouped in a general manner according to common qualities e.g.:

- The genus *Lactobacillus*, *Bifidobacterium* and *Bacillus* are lactic acid producers. This implies that, as a result of the acid environment that they produce, they inhibit the growth of certain harmful bacteria.

- The genus *Saccharomyces* includes various yeasts.

Secondly, they are classified into different species, which have more specific characteristics in common.

Lastly, they are narrowed down to different strains, which distinguishes them from other strains of the same species.

It is noteworthy to mention that probiotic effects tend to be strain-specific, meaning that the health benefits of one strain do not necessarily apply to another strain or even within the same species.⁵

What do colony-forming units (CFUs) refer to?

Probiotics are measured in terms of colony-forming units (CFUs). The CFUs indicate the number of viable cells and are written, e.g. in the following format: 1×10^8 (for 1 billion CFUs) or 1×10^{10} CFUs per dose. It is important to mention that higher CFUs do not necessarily improve the product's effectiveness.⁶

Many commercially available products contain either one or more probiotics per dosage form.^{5,6}

How do probiotics 'work'?

The majority of probiotic bacteria that naturally occur as part of human mucosal microbiota belong to the *Lactobacillus*, *Bifidobacterium*, *Propionibacterium* and *Streptococcus* genus and can potentially inhibit the adhesion and colonisation of pathogenic microorganisms. The exact mechanisms of inhibition of probiotics

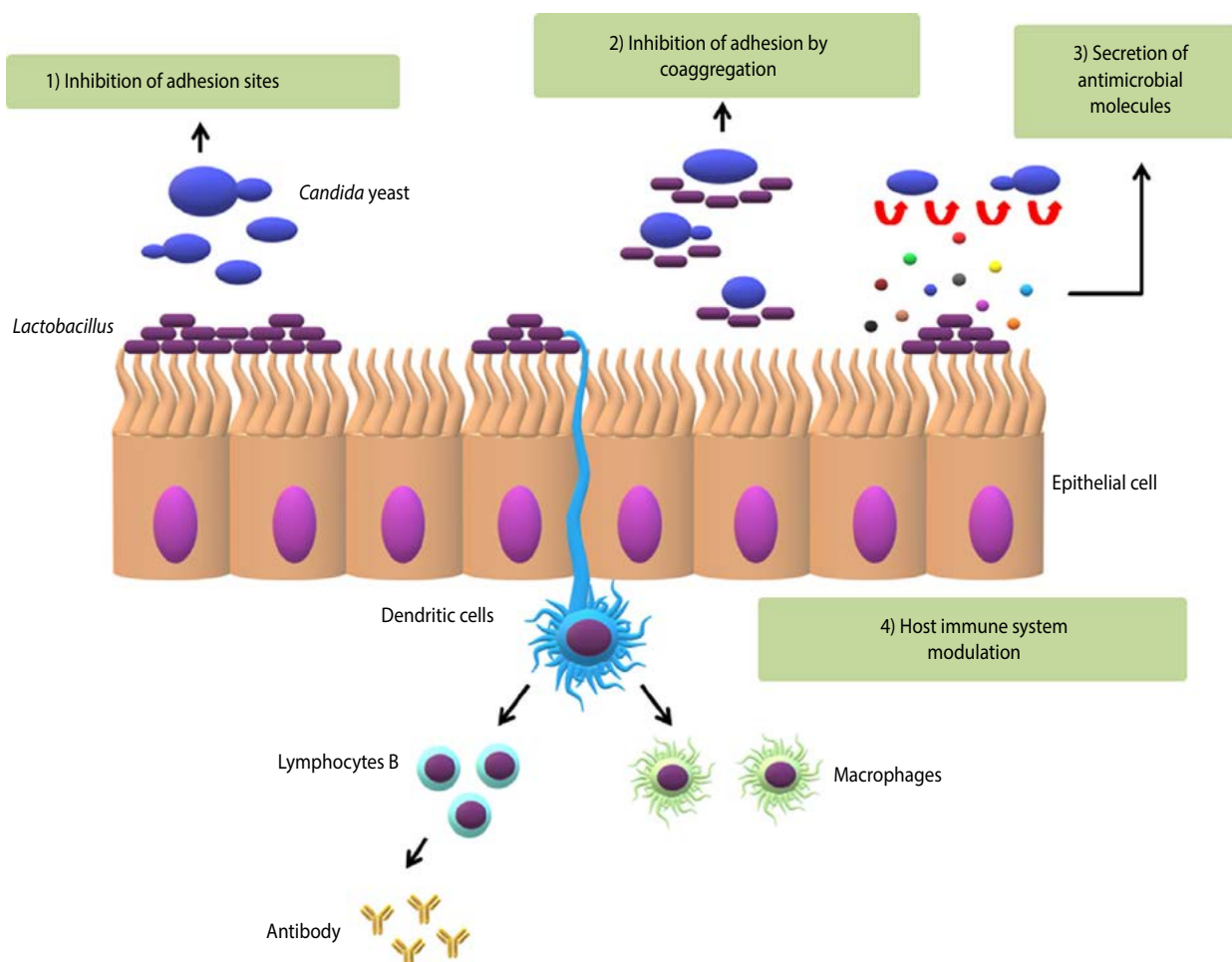


Figure 1: Major mechanisms of action of probiotics³

on the *Candida* species have not yet been fully explained since this effect is related to more than one inhibition pathway.³ However, the following mechanisms of action for the genus *Lactobacillus* have been suggested:³

Several species of the genus *Lactobacillus* have anti-*Candida* activity. This is most likely due to:

1. Direct inhibition – through competing for adhesion sites or the production of secondary metabolites.
2. Indirect inhibition – through the stimulation of the immune system of their host.

Figure 1 illustrates the major mechanisms of action of probiotics.

How do you select a probiotic?

Selection of a probiotic product includes:⁵

- Identification of the genus and species.
- Strain designation.
- Viable count of each strain at the end of its shelf-life.
- Recommended storage conditions.
- Safety under the conditions of recommended use.
- Recommended dose – which should be demonstrated by the effects of the specific probiotic on the human species.
- Accurate description of the effects of the probiotic.

What characteristics make probiotics effective?

In order for probiotic products to be of therapeutic value, they must contain live organisms in sufficient amounts. Characteristics of effective probiotics include the following:^{5,7}

The ability:

- to withstand passage through the GIT, i.e., to withstand the acidic environment of stomach acid and bile degradation.
- to colonise and reproduce in the GIT.
- to attach and adhere to the gastrointestinal (GI) epithelium.
- to stabilise the balance of the GIT microflora.^{5,7}

Requirements for probiotics include:

- Stability and viability of the product's shelf-life.
- Safety for human consumption.
- Should not include pathogenic properties.⁵

What are the possible clinical uses of probiotics?

- Prevention and treatment of certain gastrointestinal illnesses.^{7,8}

In general, some strains of probiotics have shown some efficacy in the prevention and/or treatment of:

- Antibiotic-associated diarrhoea (AAD) – *Lactobacillus* and *S. boulardii* strains.
- Acute diarrhoea and traveller's diarrhoea.
- Treatment of diarrhoea in children – *Lactobacillus reuteri* and *S. boulardii*.
- Prevention of diarrhoea in children – *Lactobacillus GG*.
- *Clostridium difficile*-associated diarrhoea (CDAD) – *Lactobacillus* species (doses of at least 10 billion CFUs/day), and *S. boulardii*.
- Inflammatory bowel diseases e.g. irritable bowel syndrome (IBS), ulcerative colitis, and Crohn's disease.

- Enhancement of the immune system – *Lactobacillus*, *Bifidobacteria* and *S. boulardii* spp.
- Alleviation of lactose intolerance.
- Prevention of vaginal infections, e.g. *C. albicans* infections.
- Alleviation of allergic conditions.

What role can probiotics play in the management of *Candida* infections?⁹

Probiotics can play an important role in the management of *Candida* infections, depending on which strain of probiotic is used. Some strains inhibit the growth of *Candida*, others assist in the prevention of colonising the GIT, while others produce antifungal substances.

Probiotics can help with *Candida* infections in a number of different ways,⁹ e.g.:

- By competitive inhibition – this means that the probiotic bacteria compete with pathogenic microorganisms by adhering to the epithelial lining, thereby preventing pathogenic adherence to the GIT, thus preventing GIT damage.
- Furthermore, probiotics also compete for nutrients thereby creating a hostile environment in which pathogens, such as *Candida*, cannot flourish.
- By healing the GIT barrier – this means that the integrity and functioning of the GIT epithelial barrier is untouched.
- By binding to pathogens – e.g. *S. boulardii* has the ability to bind to pathogens and successfully remove them from the GIT via faeces.
- By displaying antifungal effects – *S. boulardii* produces three different antifungal acids, which inhibit the growth of *C. albicans* and other *Candida* species in the GIT.

Which are the most suited probiotics for *Candida* infections?⁹

Saccharomyces boulardii (*S. boulardii*)

S. boulardii has been shown to inhibit the growth of populations of *Candida* and prevent colonisation of the GIT, at the same time reducing the risk of *Candida* translocating from the digestive tract. This may be a result of the production of caprylic acid, which is effective against *Candida*.

S. boulardii has also been shown to reduce the potential for *Candida* infestation and inflammation in inflammatory bowel disease.

Lactobacillus acidophilus NCFM®

Lactobacillus acidophilus has been shown to stimulate antibody production to *C. albicans* antigen.

Other

Lactobacillus rhamnosus GR-1® and *Lactobacillus reuteri* RC-14® colonise the vaginal tract rather than the GIT and may be useful in reducing the common symptoms associated with vaginal candidiasis.

Often, constipation, another symptom of *Candida* infections, also presents as a challenge particularly when *S. boulardii* are used in high doses. In this case a combination of *Bifidobacterium lactis* BB-12® and Fructooligosaccharides (FOS) might be advisable.

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Tips for the PA when suggesting a probiotic to a patient⁸

- Inform the patient that the optimal timing of the probiotic is product-specific, and the package insert (PI) should be consulted.
- Instruct the patient when to take the probiotic,¹⁰ e.g.:
 - Capsules should be taken on an empty stomach; or 30 minutes before meals (Bioflora[®], Kiddieforte[®]); or the capsule/chewable tablet/content of one sachet, taken with breakfast (daily probiotic supplement); or taken at least one hour apart from an antibiotic (Entiro[®]); or the tablet taken 30 minutes before meals (Bioflora[®]).
 - Sachets – the powder should be emptied into a glass/water bottle of 250 ml clean water/cooled boiled water (not hot water) added in and stirred until dissolved. Any unused solution should be discarded (Dualbalance[®]).
 - The capsule should be taken in the morning (Probiflora Adult Classic Bowel Support[®], Probiflora Adult Everyday Flora Balance[®], Probiflora Rx Intestinal Support Flora Care[®]).
 - Chewable tablets should be chewed and not swallowed whole (Probiflora Junior Everyday Flora Balance[®], Reuterina Daily[®]).
 - With the exception of *S. boulardii*, probiotics should not be taken at the same time as antibiotics.
- Inform the patient of the storage conditions for the product.
- Ascertain what dosage form the patient prefers, e.g. capsules, sachet (powder), chewable tablets, fast melt sachets.
- Who is the patient? – this is especially important when suggesting a specific dosage form, e.g. children/elderly may not be able to swallow a capsule but would be able to take the probiotic in liquid form or may prefer chewable tablets.
- Enquire about other medical conditions (e.g. diabetes – in which case a probiotic that does not contain sugar, e.g. Entiro[®], should be suggested), taking other medicines/complementary/

traditional medicine or if the patient is pregnant/breast feeding.

- Advise the patient that they should limit the use of processed food, foods that contain a lot of glucose (sugar), some fruits and drinks (e.g. bread and alcohol), because they promote the growth of pathogenic microorganisms.

Conclusion

Probiotics are contained in many products available on the market. Their use in the treatment of, e.g. *Candida* infections, has been well-documented. Knowledge of the various types of strains available, and their clinical applicability provides an opportunity for the PA to play an important role when suggesting a probiotic to a patient.

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Dietary supplements claimed to aid in weight loss

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Abstract

The use of dietary supplements claiming to aid in weight loss has received a lot of attention. However, sufficient, reputable, and scientific evidence to substantiate these claims is still lacking. Large enough clinical trials need to be undertaken so that the efficacy of these products can be scientifically proven.

Although there have been many controversies surrounding the efficacy of supplements that aid in weight loss, the details thereof will not be the focus of this article. Instead, this article will mainly be focused on the nature, content, and speculated effects of their use – either as a single ingredient, or as a combination of ingredients. No scientific claims of evidence as for the use of these supplements are made, but rather basic information is briefly summarised. This article is aimed at providing pharmacist's assistants (PAs) with basic background information and knowledge to enable them to answer patients' queries in this regard.

Keywords: weight loss supplements, weight loss

Introduction

Supplements claimed to assist in weight loss, come in various dosage forms, e.g. capsules, tablets, powders, liquids, and bars. They are used for different conditions or to target desired results without the intervention of Western medicines (prescribed medicine). Some of the desired results include, but are not limited to: weight loss, management of blood glucose, lowering of cholesterol, inhibiting the absorption of lipids from the gastrointestinal tract (GIT), etc.

These supplements do, however, not come without side-effects due to the nature of their active ingredient(s). In the following sections, some examples of commonly used natural, plant-based or other ingredients used in claimed weight loss supplements will briefly be discussed.

Some examples of ingredients used in products claimed to aid in weight loss¹

African mango (*Irvingia gabonensis*)

The African mango is a fruit-bearing tree that is native to western and central Africa. The seed fruit extract has been proposed as promoting weight loss by inhibiting adipogenesis.¹

Proposed mechanism of action:

Inhibits adipogenesis and reduces leptin levels.¹

Berberine

Berberine is a type of plant substance that is found in a variety of plants, e.g. barberry, goldenseal, Oregon grapes, and coptis.² Plants containing berberine have long been used in Native American and Chinese practices² as a traditional medicine to treat eye conditions, diarrhoea, jaundice, and acne.² It is also noted that they could be used as antimicrobial agents and may have anti-inflammatory and antioxidant properties.²

*Proposed mechanism of action:*²

- Lowers cholesterol – reduces low-density lipoprotein (LDL, 'bad cholesterol'), cholesterol, total cholesterol, and triglycerides.³
- Diabetes – may improve blood glucose measures, e.g. fasting glucose, and haemoglobin A1c (HbA1c) in type 2 diabetics and may prove beneficial when used with metformin.^{2,3}
- In the management of polycystic ovary syndrome (PCOS) with insulin resistance – may lower testosterone levels, improve cholesterol, lower fasting blood glucose and decrease insulin resistance.²

*Side-effects:*²

- Nausea
- Vomiting
- Constipation
- Diarrhoea
- Flatulence

Bitter orange [(*Citrus aurantium* L); zhi qiao]

Bitter orange is a tree native to Africa and tropical Asia, although it is also grown in the Mediterranean, California, and Florida.⁴

The skin of the fruit of this plant is a source of p-synephrine or synephrine (a stimulant related to ephedrine and is also the active ingredient), and other protoalkaloids.^{1,4} These agents act as alpha-adrenergic agonists and synephrine alkaloids can mimic the action of epinephrine and norepinephrine.¹

*Side-effects:*¹

It is not known to what extent similar side-effects, as displayed in medicinal alpha-adrenergic agonists, are seen in the following systems: cardiovascular (CV) and central-nervous systems (CNS) namely:

- Tachycardia (increased heartbeat)
- Hypertension
- Stroke
- Palpitations
- Heart attack
- Death

Notes of interest:

The Food and Drug Administration (FDA) made a statement that bitter orange is not safe as a dietary supplement and that it should be:⁴

- Avoided if there is a pre-existing heart condition, high blood pressure, or other medical problems.
- Avoided when taking caffeine or certain medication (e.g. monoamine oxidase inhibitors [MAOIs]), or herbs or other supplements that increase the heart rate.⁴

Proposed mechanism of action:

Increases energy expenditure (raising the number of calories burnt)⁴ and lipolysis, acts as a mild appetite suppressant.¹

Caffeine (as just added caffeine [single ingredient] or from guarana, kola nut, yerba maté or other herbs)¹

There are many products on the market that are promoted for weight loss containing caffeine (a methylxanthine) and/or guarana (*Paullinia cupana*), kola (or cola) nut (*Cola nitida*), yerba maté (*Ilex paraguariensis*) and green tea – all natural substances that contain caffeine. In some products the amount (mg) of caffeine is stated.

Caffeine stimulates the CNS, CVS, and skeletal muscles and also leads to increased gastric and colonic activity as well as acting as a diuretic.

Proposed mechanism of action:

Stimulates CNS, increases thermogenesis and fat oxidation.¹

Capsaicin and other capsaicinoids

Capsaicinoids are found in chili peppers of which capsaicin is the most studied.¹ Capsaicin is responsible for the characteristic 'hot' sensation that this spice evokes in the human mouth. Interestingly the same 'hot' sensation repels animals.⁵ The highest concentration occurs in the seeds, making them significantly spicier than the flesh.⁶

Proposed mechanism of action:

Increases energy expenditure (metabolism) and lipid oxidation, increases satiety, and reduces energy intake.^{1,5,6}

*Side-effects:*⁶

- Gastrointestinal sensitivity
- Increased body temperature (high metabolic rate)

Carnitine

Carnitine is the generic term for several compounds, such as L-carnitine, several acylcarnitines (e.g. acetyl-L-carnitine), and propionyl-L-carnitine.¹

Almost all cells in the human body contain carnitine, a substance which transports fatty acids into the mitochondria, and thereby acts as a cofactor for fatty acid beta-oxidation. This is the proposed use of carnitine as a weight loss agent.¹

Carnitine is also found in animal products (e.g. meat, fish, poultry, milk and dairy products) as well as some plant foods.¹

Proposed mechanism of action:

Increases fatty acid oxidation.¹

Chitosan

Chitosan, a manufactured polysaccharide, is commercially prepared from chitin made from the hard outer layers of lobsters, crabs, and shrimp.⁴ It is claimed to promote weight loss by binding to dietary fat in the GIT, thereby preventing its absorption.⁴ It is claimed that chitosan decreases cholesterol absorption.⁴

Proposed mechanism of action:

Binds dietary fat in the GIT.^{1,7,8}

Side-effects:

- Usually causes no side-effects, but may cause GIT disturbances e.g. flatulence, constipation, and diarrhoea.^{4,7,8}

Notes of interest:

- If there is an allergy to shellfish, chitosan should not be taken, because it is made from shellfish.

Chromium picolinate

Chromium III, the trivalent form of chromium, is an essential trace mineral and cofactor of insulin and enhances insulin activity.^{1,4,7} Poor chromium levels could therefore contribute to impaired glucose tolerance and type 2 diabetes.¹

Chromium picolinate is a trivalent form of chromium and picolinic acid – a naturally occurring derivative of tryptophan.⁷ Chromium picolinate is used in dietary supplements.

Proposed mechanism of action:

Increases lean muscle mass, promotes fat loss, and reduces food intake, hunger levels, and fat cravings.^{1,4,7}

*Side-effects:*⁴

- Insomnia (having difficulty with sleeping)
- Irritability
- Problems concentrating

Note of interest:

Avoid use when there are kidney problems.⁴

Coleus forskohlii

Forskolin is the proposed active constituent, which is isolated from the roots of *Coleus forskohlii*, a plant that grows in India and Thailand.¹

Proposed mechanism of action:

Enhances lipolysis and reduces appetite – possibly by stimulating cyclic adenosine monophosphate (cAMP) production. This increased cAMP production, in turn, is thought to activate lipase and promote the release of fatty acids from adipose tissue.¹

Conjugated linoleic acid (CLA)

Conjugated linoleic acid (CLA) is a mixture of linoleic acid isomers that are present mainly in dairy products and beef. There are various isomeric forms of CLA available in dietary supplements as a triacylglycerol or as a free fatty acid.

Proposed mechanism of action:

Increases lipolysis, reduces lipogenesis, gives a sense of satiety, and promotes apoptosis in adipose tissue.^{1,4,8}

Side-effects:^{4,8}

- Gastrointestinal disorders
- Nausea
- Loose stools
- Fatigue
- Flatulence

*Notes of interest:*⁴

- Long-term use in obesity may raise insulin resistance thus increasing the likelihood of causing type 2 diabetes.⁴
- May lower high-density lipoprotein (HDL) 'good' cholesterol.
- May raise the risk of heart problems.

Garcinia cambogia (hydroxycitric acid)

Garcinia cambogia is a fruit-bearing tree that grows throughout Asia, Africa, and the Polynesian islands. Extracts of *G. cambogia* contain high amounts of hydroxycitric acid, the proposed active ingredient – which is claimed for weight loss.¹ Increased release of serotonin is also proposed.^{1,7,8}

Proposed mechanism of action:

Inhibits lipogenesis (formation of fat), suppresses food intake.^{1,7,8}

*Adverse effects:*⁸

- Headache
- Nausea
- Diarrhoea
- Gastrointestinal disturbances
- Liver toxicity

Glucomannan

Glucomannan is a soluble dietary fibre derived from the konjac root of the *Amorphophallus konjac* that can absorb up to 50 times its weight in water.^{1,7} It comprises of a polysaccharide chain of glucose and mannose.⁷ The soluble fibre is proposed to bind to cholesterol, thereby exerting its possible lowering of fat.⁸

Proposed mechanism of action:

Increases feelings of satiety and fullness, prolongs gastric emptying time, blocks lipid (fat) absorption.^{1,4,8}

*Side-effects:*⁸

- Nausea
- Vomiting
- Loose stools
- Diarrhoea
- Constipation
- Abdominal discomfort
- Bloating
- Flatulence

Notes of interest:

- It is suggested to take the powder or a capsule rather than a tablet (might choke).^{4,8}
- Take medication either one hour before or four hours after food or drug intake since absorption can be influenced.⁴

Green coffee bean extract (*Coffea arabica*, *Coffea canephora*, *Coffea robusta*)

The green (unroasted) beans of the coffee plant (*Coffea arabica*, *Coffea canephora*, *Coffea robusta*) have higher levels of chlorogenic acid. The proposed mechanism of action is thought to be brought about by these high levels. Green coffee beans contain caffeine.¹

Proposed mechanism of action:

Inhibits fat accumulation, modulates glucose metabolism.¹

*Side-effects (due to the caffeine content):*¹

- Headaches
- Gastrointestinal disturbances
- Nervousness
- Insomnia
- Palpitations

Green tea (*Camellia sinensis*) and green tea extract

Green tea, which is present in some dietary supplements as an extract, is a popular beverage consumed worldwide that has several claimed health benefits.¹

The active components of green tea proposed to aid in weight loss are: caffeine and catechins, primarily epigallocatechin gallate (EGCG).¹

Available green tea extracts cover the range from minimally processed tea leaves to highly processed, manufactured concentrates of single constituents, such as EGCG.¹

Proposed mechanism of action:

Increases energy expenditure, fat oxidation, reduces lipogenesis and fat absorption.^{1,4,8}

Side-effects:^{1,8}

- Nausea
- Vomiting
- Bloating
- Flatulence
- Diarrhoea

- Dizziness
- Insomnia
- Agitation (irritability)
- Cardiovascular system side-effects
- Endocrine side-effects
- Neurological side-effects

Hoodia (*Hoodia gordonii*)

Hoodia gordonii is a succulent plant that grows in the Kalahari Desert of Southern Africa.^{1,4} The San people have traditionally used the stem of the root as an appetite suppressant as well as to decrease thirst during long hunts.^{1,4}

A glycoside commonly called 'P57' is widely believed to be the main active ingredient, although not all researchers agree.^{1,4}

Proposed mechanism of action:

Suppresses appetite, reduces food intake.¹

*Side-effects:*¹

- Nausea
- Vomiting
- Tachycardia
- Increased blood pressure
- Headache
- Dizziness

Ephedra sinica (Má Huáng)

Ephedra (also known as Má huáng), is a plant native to China, but which also grows in North America.^{1,4} It is the common name for three main species: *Ephedra sinica*, *Ephedra equisetina*, and *Ephedra intermedia*.¹

The active compounds, which are in the plant's stem, are the alkaloids: ephedrine, pseudoephedrine, norephedrine, phenylpropanolamine⁴ and norpseudoephedrine.^{1,4,7}

E. sinica is often used alone or in combination with caffeine as a popular ingredient in dietary supplements sold for weight loss and to enhance athletic performance.¹

The FDA no longer permits the use of ephedra and ephedrine⁷-containing substances because of safety concerns e.g. nausea, vomiting, anxiety, psychosis, hypertension, palpitations, stroke, seizures, heart attack and death.^{1,4} However, the FDA's ban does not apply to Chinese herbal remedies or to products such as herbal teas.⁴

Proposed mechanism of action:

Reduction of body weight.^{4,7}

Raspberry ketone

Raspberry ketone is a primary aroma compound found in red raspberries (*Rubus idaeus*) and is added to some foods as a flavouring agent.¹

Proposed mechanism of action:

Alters lipid metabolism.¹

White kidney bean/bean shell (*Phaseolus vulgaris*)

White kidney bean or bean pod (*Phaseolus vulgaris*) is a legume that is native to Mexico, Central America, and South America and is cultivated world-wide.¹ The extract is an ingredient in some weight loss dietary supplements.¹

Proposed mechanism of action:

Interferes with the breakdown and absorption of carbohydrates ('starchblocker').¹

Yohimbe (*Pausinystalia yohimbe*)

Yohimbe (*Pausinystalia yohimbe*) is a central African evergreen tree.^{1,7} The ground bark of the tree contains yohimbine, which is the active ingredient of *P. yohimbe*.⁷ Yohimbe is an alpha-2 antagonist.⁷

The use of yohimbe in some dietary supplements is promoted for libido enhancement, body building, and weight loss but it is primarily used as a traditional remedy for sexual dysfunction in men.¹

Proposed mechanism of action:

It exerts hyperadrenergic effects.¹

Adverse effects:

Yohimbe can be dangerous and very little research has been conducted on its use for weight loss and its effects on body mass.¹ Few adverse effects have been reported, although taking lower doses (20–40 mg/L) has been shown to slightly increase blood pressure, whereas doses of 200 mg/L and higher can cause headaches, hypertension, anxiety, tachycardia, myocardial infarction, cardiac failure and death.^{1,7}

Conclusion

Some dietary supplements of plant or synthetic (manmade) origin have been claimed to aid in weight loss. However, very little research in terms of adequate clinical trials, has been conducted to substantiate these claims. These supplements need scientifically based evidence to support these claims and their potential promise as adjuncts to Western (prescribed) medicine in combination with health style management strategies aimed at weight loss.

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Vaginal discharge

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Vaginal discharge in women is common, representing the natural cleansing mechanism of the reproductive tract while also providing lubrication and assisting in staving off infection. The uterus, cervix and vagina all produce and contribute to the vaginal discharge that is mainly made up of cells and bacteria. Understanding the characteristics of normal discharge is crucial in differentiating it from abnormal discharge, which may indicate an underlying infection or disease.

Normal vaginal discharge is typically clear or milky white, odourless or has a mild scent that is not unpleasant and may vary in consistency from thin and watery to thick and sticky. The volume of discharge fluctuates during the menstrual cycle, with increased amounts observed during ovulation and in the presence of sexual arousal. These variations are considered normal. However, any other changes in the colour, texture, smell or amount of discharge may mean there is a problem.

Deviations from normal discharge and what that may mean:

- **Texture:** Normal discharge ranges from watery and sticky to thick and pasty depending on the body's normal hormone fluctuations. Vaginal discharge that is chunky, foamy, or accompanied by itching and changes in colour may mean there is an infection.
- **Colour:** Dark yellow, grey, or green vaginal discharge may suggest a bacterial or sexually transmitted infection (STI). Brown or red discharge is usually associated with irregular menstruation or implant bleeding. Discharge that is red or brown when it is not menstruation-related could indicate a problem as simple as irritation in the vaginal canal or the cervix, to more serious causes like ectopic pregnancy. While white or off-white discharge is normal, a white discharge that is thicker than usual and causes itching may indicate a yeast infection.
- **Smell:** A fishy or foul smell to the discharge accompanied by changes in colour, and texture could indicate an infection.

- **Amount:** Sudden changes in the usual amount of discharge could indicate infection or other problems.

Abnormal vaginal discharge is often accompanied by other symptoms and these may include itching, redness or swelling of the vulva, discomfort during sexual intercourse or urination, and pelvic pain. Recognising these symptoms is crucial in distinguishing abnormal discharge from normal physiological variations. There are different types of infections that can cause the normal discharge to change. Some of these may be contracted after having sex with someone who already has the infection.

Types of infections

Yeast infection

Candida albicans is a type of yeast that occurs naturally in a healthy person. It can overgrow and turn into an infection if the balance of healthy bacteria and yeast is disrupted. Infection with *Candida albicans* produces a thick, cottage cheese-like discharge that is itchy and may have an odour. Antifungal vaginal creams or vaginal tablets are usually used over-the-counter to treat this infection.

Trichomoniasis

Trichomoniasis is caused by the parasite *Trichomonas vaginalis* and is sexually transmitted. It causes the vaginal discharge to become green, yellow, or grey and to be bubbly or frothy. This infection is treated with prescription antibiotics, and it is important to also treat the sexual partner(s) to prevent re-infection.

Bacterial vaginosis (BV)

BV is the most common cause of abnormal vaginal discharge. It occurs when there is a change in the number and types of bacteria normally found in the vagina. The concentration of lactobacilli is reduced while the numbers of other bacteria increase. The normal discharge may develop a distinctive fishy odour and could become off-white or greenish. It may cause itching and irritation. This type of infection is treated with antibiotics, such as metronidazole.

Gonorrhoea and Chlamydia

These are both STIs and the discharge becomes cloudy, yellow, or green. Both the patient and the sexual partner(s) will have to be treated with antibiotics.

There are also noninfectious causes of changes to vaginal discharge.

- An allergic reaction caused by soaps, lubricants or materials used in condoms or sex toys.
- Objects left in or near the vagina that do not belong there, for example a tampon that is left or forgotten inside the vaginal canal.
- Pregnancy and normal hormonal changes cause vaginal discharge to change.
- Atrophic vaginitis can sometimes develop after menopause when oestrogen levels decrease. The walls of the vagina become drier and thinner than normal. Less oestrogen also lowers the

amount of normal vaginal fluids and changes the acid balance in the vagina. Often the vaginal discharge is reduced and changes to thin, watery, yellow, or grey.

Treatment and prevention

There are several vaginal creams and pessaries available over-the-counter for the treatment of *Candida albicans* infection (vaginal thrush) and bacterial vaginosis. Most STIs however require scripted antibiotics and creams to clear the infections. Patients with STIs and recurring candidiasis should see a doctor for treatment.

Tips for preventing vaginal infections:

- Use only gentle, mild soap and warm water when cleaning the vaginal area. Avoid scented soaps and feminine products.
- Always wipe from front to back after passing a stool.
- Wear cotton underwear and avoid tight-fitting clothing.

Table I: Medicines used for the treatment of vaginal infections.

Product	Ingredients	Indications	Dosage	C/I and Warnings
Candizole V	50 mg clotrimazole/5 g	*For relief of vaginal itching, burning and discharge associated with vaginal candidiasis *From 12 years of age	One 5 g application to be inserted per vagina at night for six to seven consecutive nights	*Known sensitivity to clotrimazole *Safety in pregnancy not established *Consult a medical practitioner if symptoms do not improve in three days or if more symptoms appear
Canex V, A-Por vaginal cr, Canesten	10 mg clotrimazole/1 g	*For relief of vaginal itching, burning and discharge associated with vaginal candidiasis	*One 5 g application to be inserted per vagina at night for six to seven consecutive nights	*Known sensitivity to clotrimazole
Canesten 3VC, single dose cream and single dose vaginal tablet, Duopak	3VC - 20 mg/g; single dose cr - 500 mg/5 g; single dose vaginal tablet - 500 mg/tablet; Duopak 500 mg tablet and 10 g/100 g cream	*From 12 years of age	*3VC - 1 applicatorful inserted nightly for three days; single dose cr or tablet is inserted at night once off; Duopak tablet inserted at night and cream applied to vulva two to three times daily	*Safety in pregnancy not established *Consult a medical practitioner if symptoms do not improve in three days or if more symptoms appear
Metrogel V	37.5 mg metronidazole/5 g	*For the treatment of bacterial vaginosis *Not recommended for use in children	1 applicator full should be inserted per vagina at night for 5 days	*Known sensitivity to metronidazole *C/I in Pregnancy and lactation *Known or previously unrecognised candidiasis may present more prominent symptoms during treatment and may require treatment with candidicidal agent
Gyno-Pevaryl	Econazole cream 1 g/100 g, 150 mg vaginal ovules	Vulvovaginal candidiasis	1 applicatorful into the vagina nightly for 2 weeks 1 ovule inserted nightly for 3 days	Sensitivity to any imidazole derivatives
Betadine vaginal gel	10 mg available iodine/ 1 g in an inert water-soluble base	Vaginitis due to <i>Candida albicans</i> , <i>Trichomonas vaginalis</i> , mixed infections, non-specific infections	1 applicator full inserted at night followed by morning douching for 2 weeks	*Sensitivity to povidone-iodine *Not to be used in pregnancy and lactation Product is spermicidal
Kolorex	Each capsule contains polygodial 2.5 mg from <i>Pseudowintera colorata</i> extract	A complementary medicine that assists in the management of vaginal fungal infections including <i>Candida albicans</i>	One capsule once a day with a meal. Dosage may be increased to one capsule twice a day	*Hypersensitivity to ingredient *Pregnant and lactating women *Children under 12 years
Reuterina femme	Each capsule contains <i>Lactobacillus reuteri</i> and <i>Lactobacillus rhamnosus</i>	Assists in maintaining and restoring a healthy vaginal flora	One capsule daily, may be increased to two capsules daily	

References:

SAMF 14th edition pg 230–233

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- Consider using condoms during sexual activity and clean sex toys to reduce the risk of STIs.

Understanding the distinctions between normal and abnormal vaginal discharge is crucial for women's health. Recognising the causes, symptoms, and appropriate treatments for abnormal discharge can aid in timely interventions, preventing complications and promoting overall well-being. By adhering to preventive measures and adopting healthy lifestyle choices, women can minimise the occurrence of abnormal vaginal discharge and maintain a healthy vaginal environment.

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New formulation PregOmega Plus launched with active folate

The benefits of taking folic acid before, during and after pregnancy have long been recognised. In fact, all women of reproductive age are urged to take 400 micrograms (mcg) of folic acid each day, in addition to consuming food with folate from a varied diet, to help prevent some major birth defects of the baby's brain and spine.¹

More recently, there has been an increased emphasis on the benefits of active folate over folic acid.

Folate and folic acid are different forms of vitamin B9. Folate is the naturally occurring form of vitamin B9, known as 5-methyltetrahydrofolate (5-MTHF). Before entering your bloodstream, the body's digestive system converts it to this biologically active form of vitamin B9.²

Folic acid, on the other hand, is a synthetic form of vitamin B9. Unlike folate, not all of the folic acid you consume is converted into the active form in your digestive system. Instead, it needs to be converted in your liver and other tissues. This process can be slow and inefficient in some people, with even a small dose of 200 to 400 mcg per day not being completely metabolised until the next dose is taken.²

Recognising the unique advantage of including active folate in a prenatal vitamin, PregOmega Plus, South Africa's No 1 prenatal choice,³ has updated its formula to include 5-MTHF active folate along with zinc, iron, calcium, vitamin A, vitamin D and other essential nutrients which are crucial to ensure optimal growth and development of the foetus and to make up for any nutritional shortfall in the diet of the mother.⁵

While pregnancy depletes several nutrients in the body, including folate, calcium and vitamin B6, your daily recommended dose of many nutrients is even higher when breastfeeding than when pregnant,⁶ making the continued use of a prenatal vitamin especially beneficial while breastfeeding too.⁷



PregOmega Plus is a specifically formulated 3-in-1 prenatal supplement that also contains a calcium combination tablet and Omega-3 soft gel capsule to ensure optimal nutrition during pregnancy.⁸

The new formulation PregOmega Plus is available at leading pharmacies.

For more information, go to <https://pregomega.co.za/>.

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Andolex® a proud sponsor of The First Masked Singer South Africa

The biggest musical mystery show on the planet has hit South African TV screens, with Andolex®, South Africa's number one brand for sore throat and mouth,¹ a proud associate sponsor.

The Masked Singer South Africa is based on a reality show that first premiered in South Korea in 2015 and is now broadcast in over 50 countries worldwide. Each episode features a star-studded cast of celebrities, sports personalities and entertainers who compete against each other, singing their choice of popular songs to a live audience while hiding their true identities with elaborate costumes and masks. A celebrity panel of detectives evaluates each performance while trying to guess who might be behind the mask. The studio audience votes for their favourite performance with one mystery singer eliminated and revealed each week.

Recognising the unique opportunity that partnering with the hit show would have for Andolex®, iNova Pharmaceuticals was thrilled to step-up as sponsor soon after the news was released by Primedia in August 2022.

"This is a perfect partnership, emphasising the need for a healthy mouth and throat when you need to perform at your best," says Kym Hampton, Managing Director of iNova Pharmaceuticals, South Africa.

"This is the first sponsorship of this kind for Andolex® which not only allows us to deepen our connection with current Andolex® consumers, but to also reach a broader audience, driving the brand to new heights. We couldn't be prouder to be associated with The Masked Singer South Africa, to be part of the hype and excitement and the production of a show that will appeal to everyone," said Kym.

Andolex® provides fast effective relief of pain and inflammatory conditions of the mouth, throat and gums with products found in homes around the country. The range includes Andolex® spray and oral rinse, Andolex® C spray, oral rinse, oral gel and lozenges as well as Andolex® pastilles, to help relieve symptoms of dry mouth and throat.

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The Masked Singer South Africa, currently airs on Saturdays on **SABC 3 at 18:30** and repeated on **SABC 1 at 21:00** on Saturdays, and on **SABC 1 21:00** on Thursdays at. It is expected to become a firm favourite for South African audiences.

For more information, go to www.andolex.co.za.

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