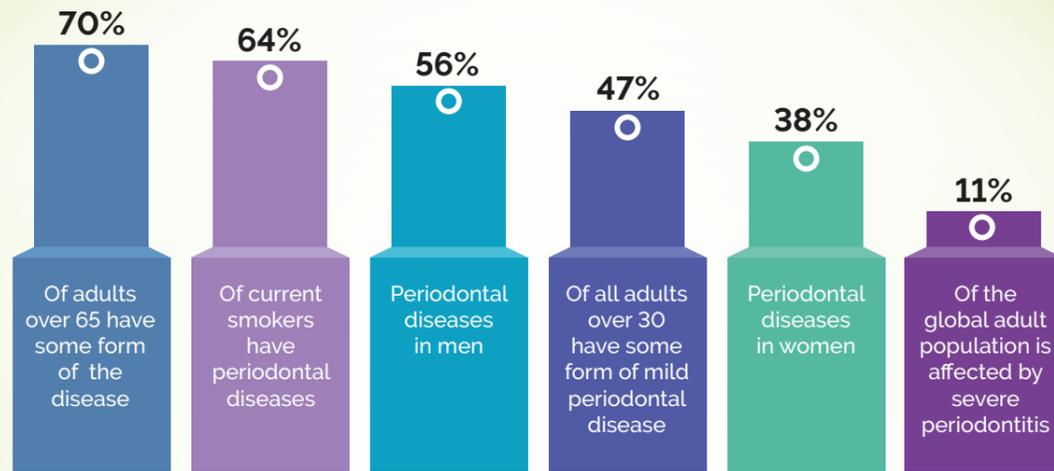


## PERIODONTAL DISEASES ARE THE SIX MOST PREVALENT NON-COMMUNICABLE DISEASES WORLDWIDE



## POSSIBLE ASSOCIATIONS BETWEEN PERIODONTAL DISEASES AND SYSTEMIC DISEASES:

- HEART DISEASE
- STROKE/CEREBROVASCULAR DISEASES
- CHRONIC LOWER RESPIRATORY DISEASE
- ALZHEIMER'S DISEASE
- DIABETES
- OSTEOPOROSIS, RHEUMATOID ARTHRITIS
- CANCER
- COMPLICATIONS OF PREGNANCY



Periodontitis is a constant **potential source of infection and inflammation**; higher levels of systemic inflammation biomarkers, such as pro-inflammatory cytokines (TNF- $\alpha$ , IL-1 and IL-6) and C-reactive protein as a result of **microbial translocation** from periodontal lesions, have been observed in patients with periodontal disease.

**REFERENCES:** **1.** Ullah, H.; Minno, A.D.; Filippis, A.D.; Sommella, E.; Buccato, D.G.; Lellis, L.F.D.; El-Seedi, H.R.; Khalifa, S.A.M.; Piccinocchi, R.; Galdiero, M.; et al. In Vitro Antimicrobial and Antibiofilm Properties and Bioaccessibility after Oral Digestion of Chemically Characterized Extracts Obtained from *Cistus x incanus* L., *Scutellaria lateriflora* L., and Their Combination. *Foods* 2023, 12, 1826. <https://doi.org/10.3390/foods12091826>  
**2.** Efficacy and tolerability of a *Scutellaria lateriflora* L. and *Cistus x incanus* L.-based chewing gum on the symptoms of gingivitis: a monocentric, randomized, double-blind, placebo-controlled clinical trial. Di Minno, A.; Ullah, H.; De Lellis, L.F.; Buccato, D.G.; Baldi, A.; Cuomo, P.; El-Seedi, H.R.; Khalifa, S.A.M.; Xiao, X.; Piccinocchi, R.; et al. Efficacy and Tolerability of a *Scutellaria lateriflora* L. and *Cistus x incanus* L.-Based Chewing Gum on the Symptoms of Gingivitis: A Monocentric, Randomized, Double-Blind, Placebo-Controlled Clinical Trial. *Nutrients* 2024, 16, 862. <https://doi.org/10.3390/nu16060862>  
**3.** Martinez-Garcia M, Hernández-Lemus E. Periodontal Inflammation and Systemic Diseases: An Overview. *Front Physiol.* 2021 Oct 27;12:709438. doi: 10.3389/fphys.2021.709438. PMID: 34776994; PMCID: PMC8578868.



# PLANOral<sup>®</sup>

SYNERGY IN A UNIQUE BLEND

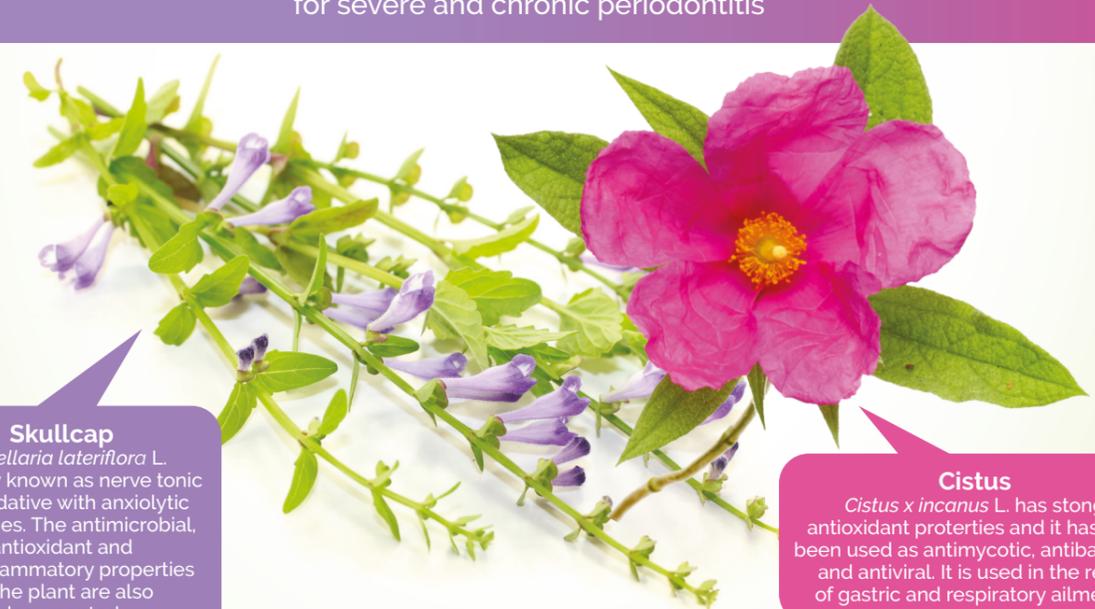
Gingivitis is a common, mild form of periodontal disease, causing tenderness, redness, and swelling of the gum around the teeth implant. If not promptly handled, gingivitis spreads to the underlying tissue and bone (**periodontitis**); the latter cannot revert to a state of health, ultimately causing tooth loss.



GINGIVITIS CAN BE SUCCESSFULLY TREATED

CHRONIC CONDITION CAUSING TOOTH LOSS

Poor oral hygiene is the most common cause of gingivitis and *Porphyromonas gingivalis* is one of the major pathogens responsible for severe and chronic periodontitis



**Skullcap**  
*Scutellaria lateriflora* L. is mainly known as nerve tonic and sedative with anxiolytic properties. The antimicrobial, antioxidant and anti-inflammatory properties of the plant are also documented.

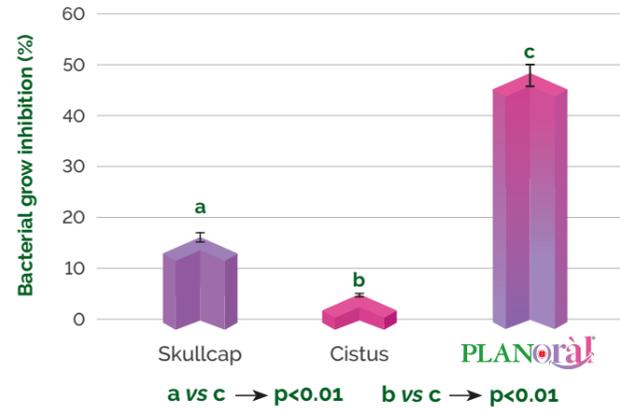
**Cistus**  
*Cistus x incanus* L. has strong antioxidant properties and it has also been used as antimycotic, antibacterial and antiviral. It is used in the relief of gastric and respiratory ailments.

PLANOral<sup>®</sup> is a patented combination of two chemically characterized dry extracts, exerting beneficial effects on oral health for the prevention of periodontitis.

# IN VITRO STUDIES

## PLANORÀL HAS ANTIBACTERIAL ACTION

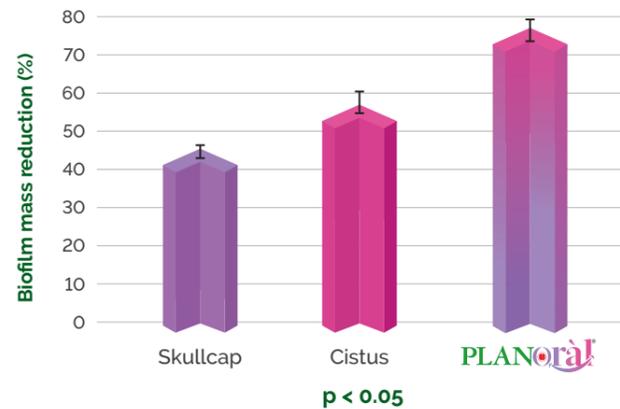
*Scutellaria lateriflora* L. and *Cistus x incanus* L. work synergically in a unique blend (patent N. IT 102021000018035) acting as antibacterial against *Porphyromonas gingivalis* to prevent periodontitis.



Dental caries and dental plaque are among the most common diseases worldwide and are caused by a mixture of microorganisms and food debris. Specific types of acid-producing bacteria, especially *Streptococcus mutans*, are the main cause of caries. The presence of *Scutellaria lateriflora* L. extract in PLANORÀL® contributes to the antibacterial activity of the blend against this pathogen (the bacterial growth inhibition accounts for ~70% compared to ampicillin).

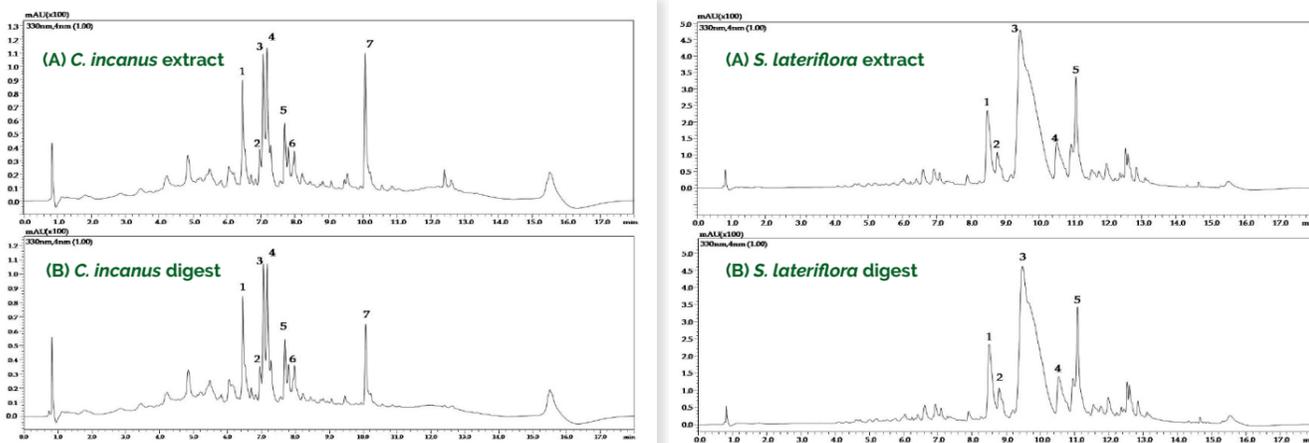
## PLANORÀL EXERTS ANTIBIOFILM ACTIVITY

Biofilm formation is one of the main virulence mechanisms of *P. gingivalis*, contributing to the increase of the gingival tissue degradation process: PLANORÀL® induces a biofilm mass reduction of about 80%



## SIMULATED DIGESTION

The polyphenolic profile of both extracts resulted to be stable after simulated oral digestion



# CLINICAL STUDY

## PLANORÀL IMPROVES GUM HEALTH

Bacteria on the tooth surface cannot be completely removed by mechanical procedures and the long-term use of antiseptic mouthwashes may damage oral microbiome causing dysbiosis and the development of antibiotic resistance.

Given the promising *in vitro* results, PLANORÀL® was used to prepare chewing gums that, insuring a prolonged contact with the masticatory system, were likely to improve oral health.

**RESULTS:** a clinically relevant and significant improvement in gingival health occurs after a 3-month intervention with the chewing gums containing *S. lateriflora* and *C. incanus* extracts. During the 3 months of treatment no subjects reported adverse effect.

