01. Final Result

Institution	White Demtal	Name	Jane
Age	34	Sex	F
GCG No.	880608900	Collection Date	2023/01/21
Registration No.	20230125-971-0000	Registered Date	2023/01/25
Specimen	Buccal Swab	Report Date	2023/01/27

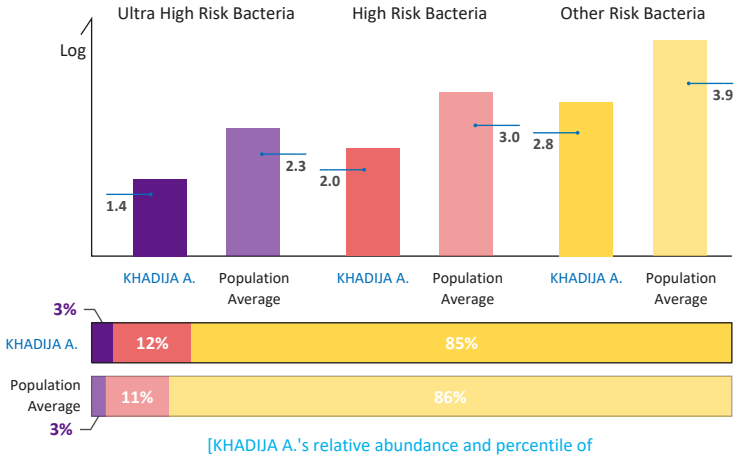
Jane's Final Result

Periodontitis-related microbial index

98/100

Good

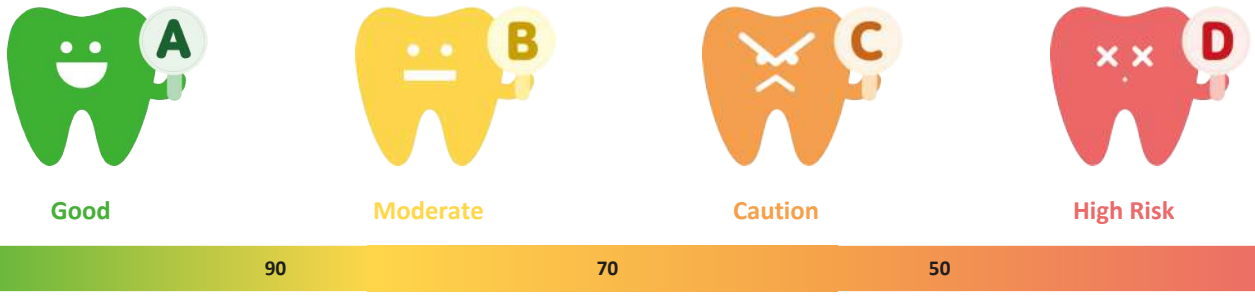
Quantitative value and ratio of the periodontitis-related microbial index



[KHADIJA A.'s relative abundance and percentile of periodontitis-related bacteria compared to the population average]

The oral microbiome test indicates that your periodontitis-related microbial index is **Good**.
This result shows **Low** concentration and distribution of harmful periodontitis-related microbes in the oral cavity.
It is recommended to maintain the current condition to prevent periodontitis.

Stages of the periodontitis-related microbial index



Good	Moderate	Caution	High Risk
Oral hygiene is in good condition, and should be maintained in order to prevent periodontitis.	At a similar level to the population average, but still requires continuous dental care.	Requires the dental care of a specialist.	Requires intensive care and treatment of a specialist.

※ This test was developed and its performance characteristics determined by GC Genome. It has not been cleared or approved by the Korean Ministry of Food and Drug Safety (MFDS).

Test by: Myeong-Geun Lee M.T(20058) MKlee Confirmed by: Ju-sun Song M.D(997) Song Ju Sun Sae-Mi Lee M.D(1067)

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02. Detailed Results

Institution	White Demtal	Name	Jane
Age	34	Sex	F
GCG No.	880608900	Collection Date	2023/01/21
Registration No.	20230125-971-0000	Registered Date	2023/01/25
Specimen	Buccal Swab	Report Date	2023/01/27

The results of Jane's periodontitis-related microbiome analysis

Population Average | Good > Caution > Bad (Microbial population)

Category	Name of bacteria	Quantitative value of each bacteria (DL, 10^2, 10^3, 10^4, 10^5, 10^6, 10^7)			Result
Ultra High Risk Bacteria	**Aa** *Aggregatibacter actinomycetemcomitans* Agressive acute periodontitis, Alveolar bone resorption, Immunosuppression, Peri-implantitis		2.50×10	Low	Good
High Risk Bacteria	**Pg** *Porphyromonas gingivalis* Chronic or Acute periodontitis, Production of inflammatory metabolites, Alveolar bone destruction,		1.90×10	Low	Good
	Tf *Tannerella forsythia* Chronic or Acute periodontitis, Acceleration of inflammations, Peri-implantitis, Halitosis		4.00×10	Low	Good
	Td *Treponema denticola* Chronic periodontitis, Suppression of antibiotcs, Immunosuppression, Peri-implantitis, Halitosis		3.00×10	Low	Good
Other Risk Bacteria	**Pi** *Prevotella intermedia* Hormone-related periodontitis, Acute necrotizing ulcerative gingivitis(ANUG), Peri-implantitis, Halitosis		9.50×10	Low	Good
	Fn *Fusobacterium nucleatum* Acute necrotizing ulcerative gingivitis(ANUG), Formation of a biofilm of periodontal plaque, Oral tissue		3.40×10	Low	Good
	Pm *Parvimonas micra* Peridontal tissue destruction, Peridontitis, Peri-implantitis		3.70×10	Low	Good
	Fa *Filifactor alocis* Chronic or Acute periodontitis, Peri-implantitis, Halitosis		1.81×10^2	Low	Good
	Pe *Porphyromonas endodontalis* Chronic periodontitis, Gingivitis, Oral submucosal abscess, Alveolar bone destruction		3.90×10	Low	Good
	Ts *Treponema socranskii* Periodontitis and Gingivitis, Alveolar bone destruction		2.32×10^2	Normal	Caution
Total (Amount of microbes analyzed (10 species))			7.36×10^2		

02. Detailed Results

Institution	White Demtal	Name	Jane
Age	34	Sex	F
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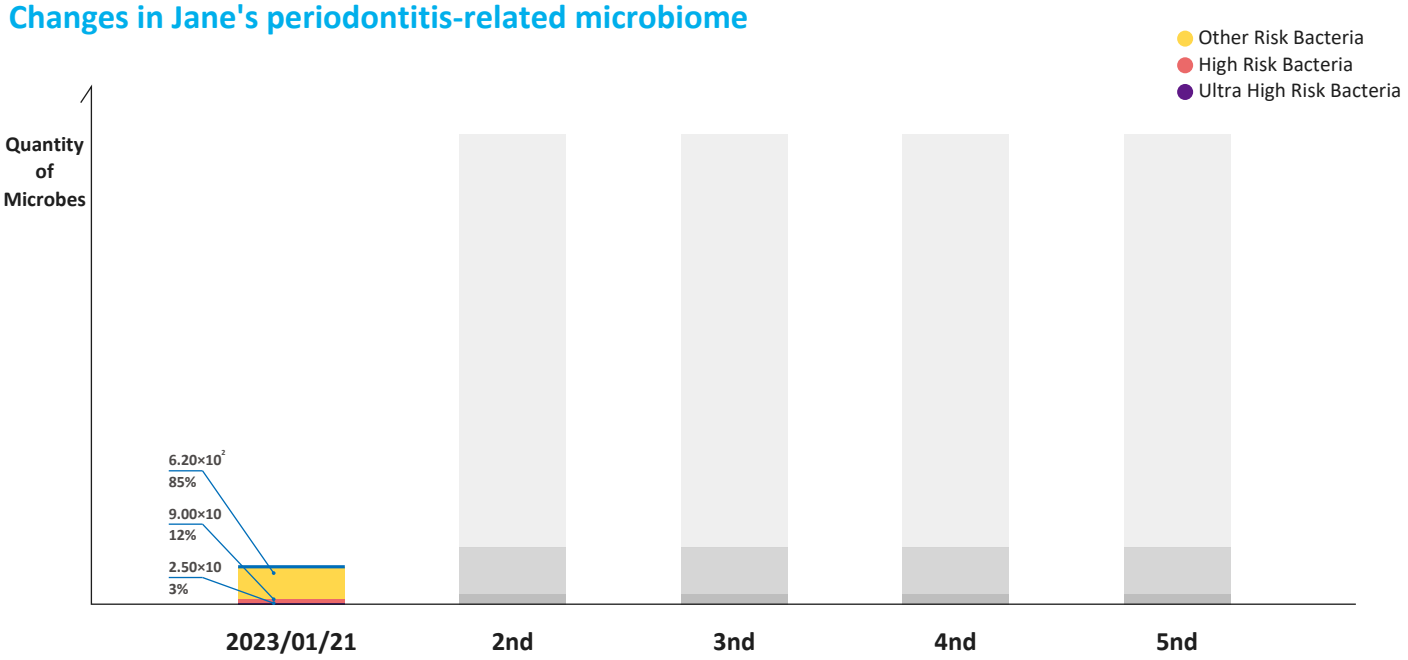
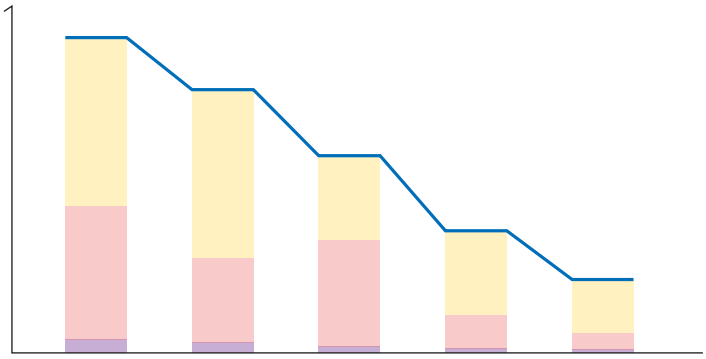
Changes in Jane's periodontitis-related microbiome



	Collection Date	Ultra High Risk Bacteria	High Risk Bacteria	Other Risk Bacteria
1	2023/01/21	2.50 × 10	9.00 × 10	6.20×10^2

Example of a positive change

Through periodontitis-related microbiome testing, along with consistent periodontal care, you will be able to notice a **decrease in the amount of high-risk bacteria**. We recommend to be aware of your current dental state through regular oral microbiome tests for proper management of your peridontal health.



03. Guidelines
(Recommendations)

Institution	White Demtal	Name	Jane
Age	34	Sex	F
GCG No.	880608900	Collection Date	2023/01/21
Registration No.	20230125-971-0000	Registered Date	2023/01/25
Specimen	Buccal Swab	Report Date	2023/01/27

The oral microbiome test indicates that your periodontitis-related microbial index is **Good**.
Periodontal care along with regular dental checkup is recommended to prevent periodontitis.

Dental treatment for each stage of periodontitis

Early stage

Scaling (Removal of accumulated plaque): Plaque buildup in the oral cavity can have a bad influence on periodontal health. Therefore a special device (scaler) is used to remove the plaque and prevent re-attachment by smoothing tooth surfaces. It is recommended to get scaling done every 3-6 months, more than twice a year.

Gingivitis

Gingivitis is caused by a biofilm of bacteria on the surface of the teeth. The gum can be reversed back into a healthy state by good hygiene care. However, without proper management or treatment, development into periodontitis may occur. Gingivitis is an early symptom of periodontal disease, and scaling or root planning can help by removing some of the calculus, plaque, and cementum attached to the roots below the gum, making the tooth roots clean and firm.

Early and advanced stages of periodontitis

During periodontitis, the alveolar bone gradually weakens, and if the disease is not treated, teeth may be lost. Gingival curettage is a procedure that removes deposits of plaque on the roots of the gum, early in the stage of periodontitis, by scraping gum tissue off the roots. For more developed stages of periodontitis, gingivectomy can be used to cut out infected tissue by removing deteriorated periodontal pockets. Gingivectomy inhibits the adverse action of the gingival cyst, allowing gingiva to be reformed to an extent. It also facilitates the removal of plaque, and cleans the rough surface of the root.

Guidelines for periodontal care (Dental check-up and treatment considerations)

Resin filling: A method of treatment performed by removing a small part of cavity and filling the empty parts with other material. The fillings used in the procedure are small or medium-sized. Therefore they can endure the force excerted on the tooth when chewing and do not break easily. Because this method does not remove much of the tooth, it is suitable for conservative treatment. Resin filling is also used to treat alveolar bone damaged in periodontitis.

Antibiotics and drugs: Antibiotics can be used against bacteria inside the plaque. Also dental ointment, which has a high concentration of antibiotics, can be applied on the peridontal tissue or inserted into the peridontal pocket. This method can reduce the risk of side effects possibly caused by antibiotics.

03. Guidelines
(Recommendations)

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The oral microbiome test indicates that your periodontitis-related microbial index is **Good**.
Periodontal care along with regular dental checkup is recommended to prevent periodontitis.

Lifestyle Guidelines


Be sure to chew food thoroughly. This action pushes out the food stuck between teeth and gums so self-cleaning can happen. It also stimulates the bone-making cells surrounding the teeth, strengthening the alveolar bone.

When chewing, all teeth should be used evenly. Unused teeth are prone to gum diseases bacause the surrounding bones can degenerate due to lack of exercise. If you chew on one side, the teeth on the frequently-used side may wear out, causing change of face formation.

Cessation of smoking is recommended. The impact of smoking on periodontal tissues have been consistently reported since 1940, and smoking is one of the peridontal disease risk factors that can be controlled.


A dry mouth causes problems such as pain in the tongue, mouth ulcers, cavities, periodontitis, fungal infections, and halitosis. To prevent a dry mouth, it is recommended to stay hydrated by drinking water. It is better to drink water that is rich in minerals and does not contain sugar. Mineral water helps the formation of gingival bones in the oral cavity. It is advised to drink 1.5-2ℓ of water (about 10 paper cups) per day.


To maintain healthy teeth and gum, it is recommended to remove accumulated plaque through brushing at least twice a day, and floss daily. Plaque on interdental surfaces can be removed efficiently using tools such as dental floss, interdental toothbrushes, and other interdental cleaning aids (e.g. Waterpik).

03. Guidelines
(Recommendations)

Institution	White Demtal	Name	Jane
Age	34	Sex	F
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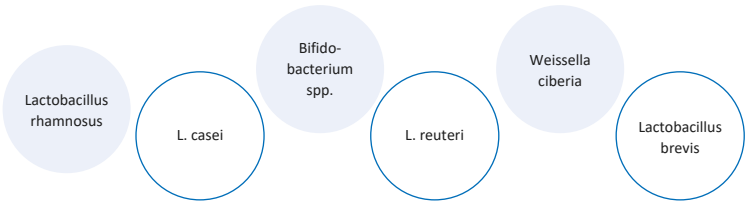
The oral microbiome test indicates that your periodontitis-related microbial index is **Good**.
Periodontal care along with regular dental checkup is recommended to prevent periodontitis.

Supplement Guidelines

Oral probiotics

Oral probiotics are beneficial as they compete with the harmful bacteria. Unlike most other lactic acid bacteria, they do not produce strong acids, and therefore can fix well to the oral cavity. Oral probiotics can be used to regulate harmful bacteria in the body, including the mouth. Also, it can keep the body healthy by enhancing immunity.

[Examples of good lactic acid bacteria]



Diet Guidelines

Vitamin C : Antioxidant effect that can repair damged gum
- When deficient: May cause scurvy (ulcerative gingivitis, tooth detachment and rapid formation of the periodontal pocket)
- Recommended amount of intake : 75~100mg

Seaweed : Helps prevent periodontal disease and cavities

Vegetables and fruits : Chewing promotes the secretion of saliva and inhibits the formation of plaque, thus reducing the risk of oral diseases.

Calcium : Vital for the prevention of periodontitis
- Dairy products: Prevents the loss of alveolar bone
- Probiotics such as lactic acid bacteria: Regulates harmful bacteria in the gum

Green tea
- EGCG(Astringent polyphenol substance) : Reduces inflammation in the oral cavity
- Catechin(Antioxidant) : Helps prevent periodontal diseases

Appendix

Test Limitations

The disease-related microbial index in greenbiome is calculated by only considering the effects of the oral microbes included in the test. Values may vary with the addition of new research results. Also, it should be taken into account that factors other than oral microbes, such as lifestyle, genetics, and the environment, may affect the risk and onset of the disease.

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01. Final Result

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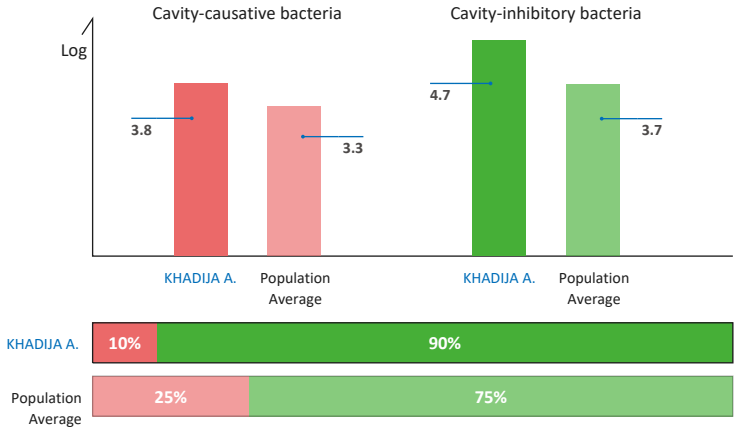
Jane's Final Result

Dental Cavity-related microbial index

90/100

Good

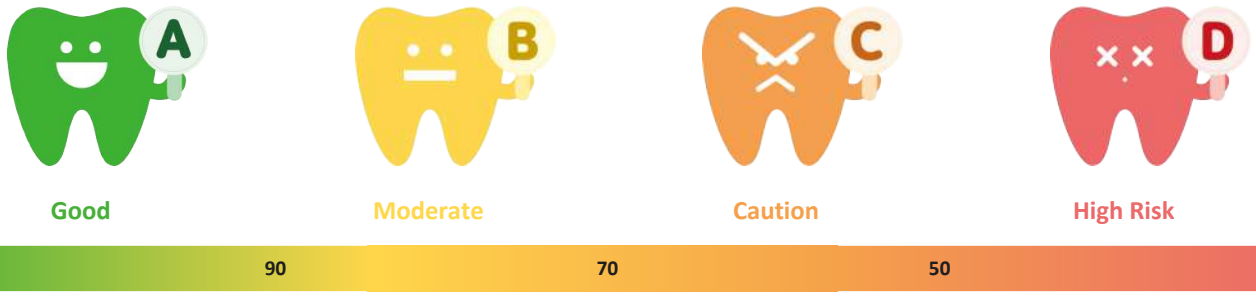
Quantitative value and ratio of the cavity-related microbial index



[KHADIJA A.'s relative abundance and percentile of cavity-related bacteria compared to the population average]

The result of your oral microbiome test indicates that your dental cavity-related microbial index is **Good**.
This result shows **Low** concentration of cavity-causing bacteria and **High** concentration of cavity-inhibitory bacteria.
Maintain the current condition to prevent dental cavities.

Stages of the cavity-related microbial index



Good	Moderate	Caution	High Risk
Oral hygiene is in good condition, and should be maintained in order to prevent cavities.	At a similar level to the population average, but still requires continuous dental care.	Requires the dental care of a specialist	Requires intensive care and treatment of a specialist.

※ This test was developed and its performance characteristics determined by GC Genome. It has not been cleared or approved by the Korean Ministry of Food and Drug Safety (MFDS).

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02. Detailed Results

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The results of Jane's cavity-related microbiome analysis

Population Average | Good > Caution > Bad Microbial population

Category	Name of bacteria	Quantitative value of each bacteria (DL, 10^2, 10^3, 10^4, 10^5, 10^6, 10^7)		Result
Cavity-causative bacteria	**Smu** *Streptococcus mutans* • The most significant cavity-causative • Forms plaque and tartar • Associated with pulpitis and cavities	2.10×10	Low	Good
	Ss *Streptococcus sobrinus* • Adheres to cavities, dental abscess, or plaque, and causes the colonization of other bacteria.	2.70×10	Low	Good
	Ag *Actinomyces gerencseriae* • Bacteria that causes tooth decay, cavities and halitosis	4.90×10	Normal	Caution
	Sw *Scardovia wiggsiae* • Cause of cavities • Increases tooth decay in combination with S.mutans • Leads to toothache, infections and chronic dental diseases	2.60×10	Low	Good
	Vp *Veillonella parvula* • Cause of cavities • Forms plaque together with S.mutans • Associated with oral biofilm formation	5.61×10^3	Normal	Caution
	Ca *Candida albicans* • Cause of cavities • Mainly found in dry mouths and mouths with dental prosthesis • The most highly pathogenic bacteria among the species Candida, which is associated with oral fungal infections.	2.20×10	Low	Good
Cavity-inhibitory bacteria	**Ssa** *Streptococcus sanguinis* • Found in healthy teeth • Antagonist of S.mutans	5.15×10^4	High	Good
Total (Amount of microbes analyzed (7 species))		5.72×10^4		

02. Detailed Results

Institution	White Demtal	Name	Jane
Age	34	Sex	F
GCG No.	880608900	Collection Date	2023/01/21
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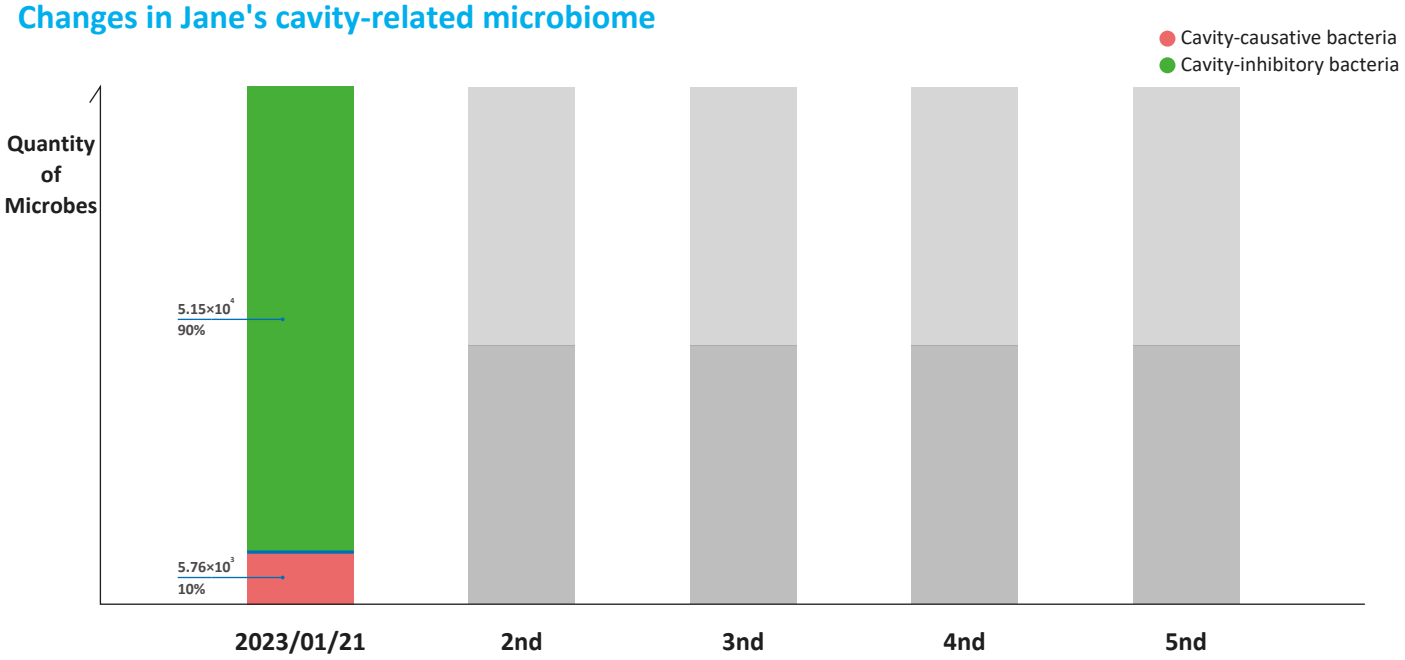
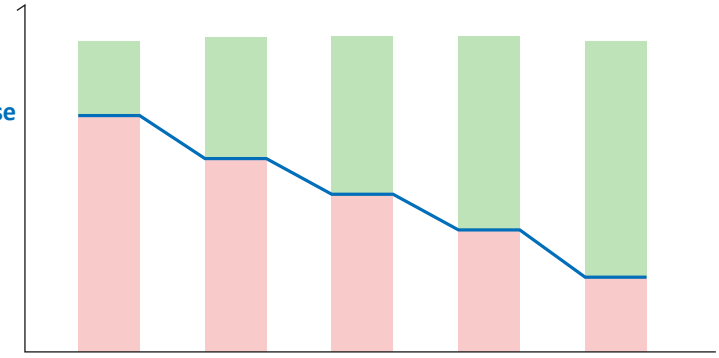
Changes in Jane's cavity-related microbiome



	Collection Date	Cavity-causative bacteria	Cavity-inhibitory bacteria
1	2023/01/21	5.76×10^3	5.15×10^4

Example of a positive change

Through cavity-related microbiome testing, along with consistent dental care, you will be able to notice a **decrease in the amount of cavity-causative bacteria and an increase in the amount of cavity-inhibitory bacteria.** We recommend to be aware of your current dental state through regular oral microbiome tests for proper management of your dental health.



03. Guidelines
(Recommendations)

Institution	White Demtal	Name	Jane
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The oral microbiome test indicates that your dental cavity-related microbial index is **Good**.
Dental care along with regular checkup is recommended to prevent dental cavities.

Cavities : The way they are formed

The cavity-causative bacteria, S.mutans, ingest the remaining glusose and fructose on the surface of the teeth.

Bacteria break down the sugar to make glucan. Glucan then forms plaque.

S.mutans multiply within the plaque.

They break down sugar, producing lactic acid.

Lactic acid causes tooth decay, eventually leading to cavities.

Stages of Dental Treatment for Cavities

Early stage

Tooth Filling: Decayed parts of the tooth are removed, and the tooth is then filled up with substances such as silver, gold, or composite resin.

Enamel and dentin decay

When cavity at an early stage is left untreated, and tooth decay is allowed to continue down to the pulp(nerves), the holes in the teeth will become larger and cause pain. Procedures such as pulp cappping, which is performed for restoration of damaged dentin, and root canal, the performance of removing nerves and filling the tooth, can be done to save the tooth.

Pulp damage and abscess

When cavity is left untreated and tooth decay advances further in the pulp, forming a pocket of pus at the roots, symptoms such as swelling, fever, and severe pain are caused. Root canal is performed or, if treatment is unavailable, the tooth is extracted. Regular dental check-ups are recommended as cavities can always reoccur between the teeth and fillings.

Guidelines for dental care (Dental check-up and treatment considerations)

Scaling (Removal of accumulated plaque): Plaque buildup in the oral cavity can have a bad influence on periodontal health. So a special device (scaler) is used to remove the plaque and prevent re-attachment by smoothing tooth surfaces. It is recommended to get scaling done every 3-6 months, more than twice a year.

Resin filling: A method of treatment performed by removing a small part of cavity and filling the empty parts with other material. The fillings used in the procedure are small or medium-sized. Therefore they can endure the force excerted on the tooth when chewing and do not break easily. Because this method does not remove much of the tooth, it is suitable for conservative treatment.

03. Guidelines
(Recommendations)

Institution	White Demtal	Name	Jane
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The oral microbiome test indicates that your dental cavity-related microbial index is **Good**.
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Lifestyle Guidelines


Be sure to chew food thoroughly. This action pushes out the food stuck between teeth and gums so self-cleaning can happen. It also stimulates the bone-making cells surrounding the teeth, strengthening the alveolar bone.

When chewing, all teeth should be used evenly. Unused teeth are prone to gum diseases bacause the surrounding bones can degenerate due to lack of exercise. If you chew on one side, the teeth on the frequently-used side may wear out, causing change of face formation.

Apart from during meals, the upper and lower teeth should not stay in contact with each other. Unconscious clenching of the teeth exerts excessive force and damages the bones surrounding the teeth. In turn, this causes damage to the alveolar bone.


A dry mouth causes problems such as pain in the tongue, mouth ulcers, cavities, periodontitis, fungal infections, and halitosis. To prevent a dry mouth, it is recommended to stay hydrated by drinking water. It is better to drink water that is rich in minerals and does not contain sugar. Mineral water helps the formation of gingival bones in the oral cavity. It is advised to drink 1.5-2ℓ of water (about 10 paper cups) per day.


To maintain healthy teeth and gum, it is recommended to remove accumulated plaque through brushing at least twice a day, and floss daily. Plaque on interdental surfaces can be removed efficiently using tools such as dental floss, interdental toothbrushes, and other interdental cleaning aids (e.g. Waterpik).

03. Guidelines
(Recommendations)

Institution	White Demtal	Name	Jane
Age	34	Sex	F
GCG No.	880608900	Collection Date	2023/01/21
Registration No.	20230125-971-0000	Registered Date	2023/01/25
Specimen	Buccal Swab	Report Date	2023/01/27

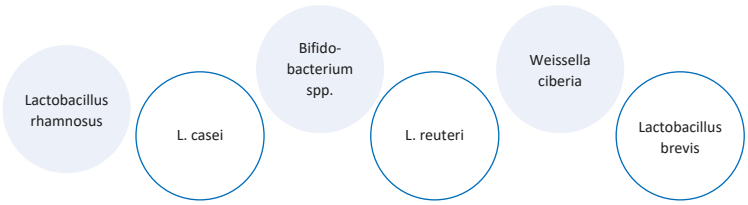
The oral microbiome test indicates that your dental cavity-related microbial index is **Good**.
Dental care along with regular checkup is recommended to prevent dental cavities.

Supplement Guidelines

Oral probiotics

Oral probiotics are beneficial as they compete with the harmful bacteria. Unlike most other lactic acid bacteria, they do not produce strong acids, and therefore can fix well to the oral cavity. Oral probiotics can be used to regulate harmful bacteria in the body, including the mouth. Also, it can keep the body healthy by enhancing immunity.

[Examples of good lactic acid bacteria]



Diet Guidelines

Sweet food and drinks
Causes cavities

Calcium
Vital for the prevention of cavities
Dairy products, leaf vegetables(broccoli, bok choy etc.), nuts(almond, walnuts etc.), canned fish

Seaweed
Helps prevent periodontal disease and cavities

Vegetables and fruits
Chewing promotes the secretion of saliva and inhibits the formation of plaque, thus reducing the risk of oral diseases.

Degree of cavity causation

Food	Index	Food	Index
margarine, butter	0	raisin	16
fish cake	2	donut	19
milk, strawberry	6	candy	23
apple, ramen, cola	10	biscuit	27
icecream, sweet potato	11	strawberry jam	31
yogurt	14	caramel	38
chocolate	15	jelly	48

• The higher the index, the higher the risk of having cavities.
Reference: Korean Dental Association (KDA)

Appendix

Test Limitations

The disease-related microbial index in greenbiome is calculated by only considering the effects of the oral microbes included in the test. Values may vary with the addition of new research results. Also, it should be taken into account that factors other than oral microbes, such as lifestyle, genetics, and the environment, may affect the risk and onset of the disease.

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