

SAY NO TO

GLOW

Marketing Plan*

**Disclaimer: This Marketing Plan is written from the perspective of an established company introducing a new product.*

I. Executive Summary

Say No to Glow (SNG) is a biotechnology company based in Taipei, Taiwan, and strives to develop a health product that will improve the quality of life for patients with deficient aldehyde dehydrogenase 2 (ALDH2) enzymes. SNG plans to increase revenue by capitalizing on proprietary drug discovery and delivering technologies to develop and commercialize products that address unmet medical and market needs. In later developmental stages, SNG can partner with or license to other established companies to accelerate development and commercialization. This will allow SNG to maximize product benefits for patients as well as investment returns for shareholders.

SNG aims to independently develop a probiotic throat lozenge, starting with chemical transformation and extending through approval and distribution. SNG intends to collaborate with throat lozenge factories to manufacture the final product. In parallel, SNG will continue to refine its technology in hopes to expand and continue to develop newer and better products. The Company intends to develop an initial set of probiotic products that will earn a profitable revenue within the span of 1 year.

ALDH2 Deficiency, more commonly known as Alcohol Flushing Syndrome or Asian Glow, is characterized by East Asians' tendency to flush after a few drinks. Due to the genetic mutation that reduces the efficiency of the ALDH2 enzyme, when deficient East Asians drink, toxic acetaldehyde--a byproduct of alcohol metabolism--rapidly accumulates. The buildup of acetaldehyde not only increases heart rate, induces headaches, nausea, and other "drunk" symptoms, but it also greatly heightens one's cancer risks, especially in the head, neck, and esophagus.

SNG seeks to develop a preventative product that will reduce potential acetaldehyde buildup. ALDH2 deficiency affects 540 million people--8% of the world population. In East Asia (including Japan, China, and Korea), this is a much bigger problem, where the number rises to 36%. Taiwan, with approximately 47% of the population carrying this genetic mutation--holds the highest ALDH2 deficient percentage in the world. The substantial population of deficient patients in East Asia, and especially in Taiwan, creates an ideal market SNG would like to venture into. Our market analysis shows a disconnect between the main risks of ALDH2 Deficiency and current products on the market; all products aiming to treat ALDH2 Deficiency in the present day market revolves either around the idea of liver functionality and protection, or reducing flushing symptoms. The Company now understands its stance amongst competitors and its unique selling point: SNG recognizes the unmet market need of reducing cancer risks induced by alcohol consumption in the upper digestive and head/neck region (the main cancer risks resulting from ALDH2 Deficiency), and not the liver.

In order to support the development of our technology, SNG requires an initial investment of 13 million USD from financial institutions. Financial projections are calculated following the cost structure of Grape King Bio Company, and with statistics on Taiwan's drinking and deficient population. Grape King Bio is currently one of Taiwan's top health food manufacturers in the biotechnology industry¹. All values are discussed in terms of USD.

Probiotic throat lozenges will be priced at 15 USD per packet of 30. The set price is a result of calculations, which include, among other considerations, the costs of equipment and human resources. SNG will work with well-established distribution platforms, including pharmacies, convenience stores, and grocery store chains to distribute its probiotic lozenge alongside Nin Jiom, an established herbal throat lozenge manufacturer. SNG intends to take advantage of both modern day media platforms and more traditional methods of promotion.

II. Business Description

SNG's management team consists of professionals with years of industry experience. In order to advance pipeline products, SNG has teamed up with a network of advisors and consultants in legal, regulatory, business development, and commercial areas, among others. These advisors and consultants are industry veterans with notable experience and expertise in their respective fields. SNG has also established long-term partnerships with factories and supply chain vendors. These meaningful partnerships provide the resources and flexibility SNG require to rapidly advance an asset from research to development and finally, commercialization.

III. Market Analysis

Current Market Trends/Situational Analysis

Business drinking is especially prevalent in East Asian countries, such as in China, Japan, Korea, and Taiwan. In these countries, traditionally, business drinking means gathering around dinner tables and making toasts; drinking is a way of connecting and showing respect--82% of young Chinese people believe that drinking is essential for career development². As the new generation continues to grow and change, however, they have started to develop their own drinking culture. Drinking no longer represents the sole medium for forming business connections or relationship building. However, though the new generation is resisting business drinking, they are not necessarily drinking *less*--China's per capita alcohol consumption is actually increasing³, as drinking is increasingly being considered more recreational. Under the ideals of the new generation, "drinking has become more about experiencing culture, cultivating friendship, relaxing and having fun"⁴. China's Center for Disease Control and Prevention conducted a survey in 2015 hoping to recognize the current drinking trends among teenagers,

¹ Bio, 葡 G. (n.d.). Grape King. Retrieved from <https://www.grapeking.com.tw/en/about/vision>

² Staff, W. (2015, June 12). More Than Half of Chinese Teens Have Tried Alcohol, Survey Says. Retrieved from <https://blogs.wsj.com/chinarealtime/2015/06/12/more-than-half-of-chinese-teens-have-tried-alcohol-survey-says/>

³ Country profiles 2014. (2014, May 12). Retrieved from http://www.who.int/substance_abuse/publications/global_alcohol_report/profiles/en/

⁴ S. (2018, March 24). 游盈隆專欄：台灣人飲酒習慣大揭秘. Retrieved from <https://www.storm.mg/article/415034>

where over 30,605 students across 6 cities (Beijing, Shanghai, Guangzhou, Jinan, Chengdu, and Harbin) were surveyed. Their results showed that 28% of students started drinking before they were 10 years old, and over 62% now drink regularly⁵.

Taiwan also has its own drinking culture of its own. The Taiwanese Public Opinion Foundation recently published a study titled, “Taiwanese Drinking Habits,” aimed to learn about Taiwanese society and people through their drinking habits, preferences, and patterns. Of the population surveyed, 65% believe that “drinking is beneficial for health.” The study also analyzed relationships between age, liquor type, and economical status. The analysis showed that the drinking population is getting younger, potentially due to the younger generation having higher financial and living standards compared to the older generation⁶.

Another factor consistently shaping the drinking culture is alcohol advertisement. The absence of strict alcohol advertisement regulations have allowed alcoholic beverages to take on a misleading image. Through commercial ads, slogans, and social media, alcohol has become viewed as a necessity during gatherings: the perfect break-up remedy, and a way to both de-stress and promote **fun**. Together, the combination of East Asians’ high ALDH2 deficiency rates and the drinking culture that we see today leads to serious health consequences.

Competitor Analysis

Most available treatment options currently on the market can be categorized into 2 types : Preventative and Non-preventative. **Preventative** is defined as long-term care for the purpose of supporting alcohol metabolism, and **Non-preventative** is defined as short-term care for the purpose of masking symptoms. Below are sample products analyzed in our market analysis.

Preventative Products

- *Essential AD2* claims: fights alcohol flush reactions, protects one’s body from the dangerous toxin, acetaldehyde, and improves liver health and function by increasing the activity of the mutated ALDH2.
- *Sunset Alcohol Flush Support* claims: restricts “facial histamine reactions” that lead to flushing, “neutralizes carcinogenic alcohol metabolites,” “increases overall alcohol tolerance,” and “assists and supports ALDH2 enzyme.”
- *Before Elixir* is a drink marketed as a hangover cure/prevention, and mainly claims to protect one’s liver.
- *Reducerall* claims to “reduce symptoms of Asian Glow” in order to “improve self confidence,” stimulate ALDH2 enzyme, and prevent hangovers and headaches.

Non-preventative Products

- *Pepcid AC* and *Zantac* were not designed or marketed for the purpose of ALDH2 deficiency, but their functions do reduce flushing.

⁵ 我国城市青少年饮酒行为专项数据出炉. (n.d.). Retrieved from <http://www.nbd.com.cn/articles/2015-06-09/921766.html>
⁶(Staff, 2015)

- Cosmetics provide a way to mask one's flushing reaction without ingesting anything.

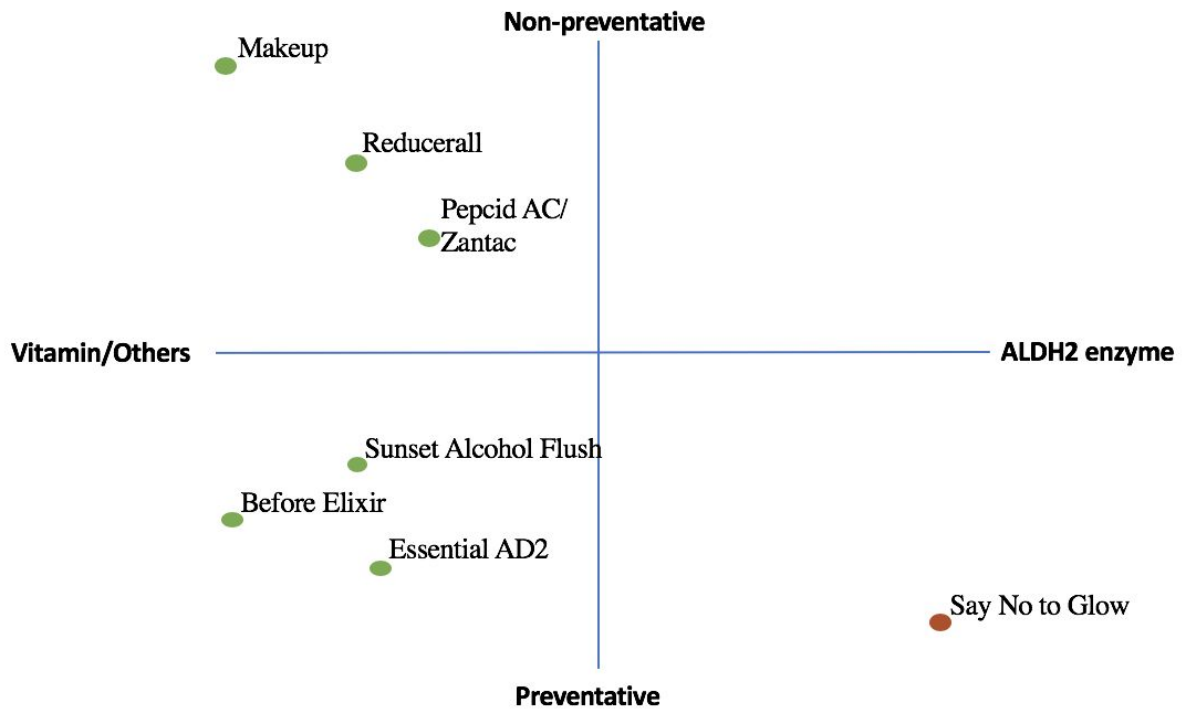


Figure 1. Competitor Chart.

Among the products we analyzed, the competitors are either health supplements or cosmetics. None of these products contain functional ALDH2 enzymes.

SWOT Analysis

We performed a SWOT analysis of the three preventative products, as well as our own.

Essential AD2, Sunset Alcohol Flush, Reducerall

| | |
|--|--|
| <p>Strengths</p> <ul style="list-style-type: none"> • Clears acetaldehyde using antioxidants • Boosts natural metabolism • Easily accessible over-the-counter product • (<i>Essential AD2</i> is clinically proven) | <p>Weaknesses</p> <ul style="list-style-type: none"> • Does not directly supply ALDH2 • Does not change activity of mutant ALDH2 • Only targets blood acetaldehyde levels • Not clinically proven (except <i>Essential AD2</i>) • (<i>Essential AD2</i> requires daily intake) |
| <p>Opportunities</p> <ul style="list-style-type: none"> • Take advantage of large ALDH2 deficiency population in Taiwan • Increasing use of social media for marketing campaigns | <p>Threats</p> <ul style="list-style-type: none"> • Not easily available in Taiwan • Product that contains ALDH2 enzyme may be more effective |

| | |
|---|--|
| <ul style="list-style-type: none"> ● Increased education and public awareness of ALHD2 deficiency ● Collecting data from social media for marketing advantage | |
|---|--|

Say No to Glow

| | |
|---|--|
| Strengths <ul style="list-style-type: none"> ● Synthesized ALDH2 delivered directly into the mouth ● ALDH2 stays in mouth (specifically targets upper digestive tract where cancer risks are increased) ● We have research data showing reduction in acetaldehyde | Weaknesses <ul style="list-style-type: none"> ● Limited mass production ● Taste of product could alter taste of the alcoholic beverage ● Limited funding |
| Opportunities <ul style="list-style-type: none"> ● Take advantage of large ALDH2 deficiency population in Taiwan ● increasing use of social media for marketing campaigns ● Increased education and public awareness of ALHD2 deficiency ● Collecting data from social media for marketing advantage | Threats <ul style="list-style-type: none"> ● Wealthier companies can overtake product idea and market it more efficiently ● Degradation of enzymes/probiotics |

Market Segmentation

SNG's product is designed to be applicable to all individuals of drinking age including both older and younger generations). Though ALDH2 deficiency is prevalent throughout East Asian countries, Taiwan will be SNG's first target market. With the highest ALDH2 Deficiency rate in the world and a liberal attitude towards alcohol consumption, Taiwan stands as an ideal market for SNG to venture into. In Taiwan, alcohol plays a major role in people's social networks; employees are encouraged to go out for drinks after work with colleagues and business acquaintances for "communication" purposes. According to the Ministry of Treasury and Finance, in 2014, over 3 billion USD were spent on imported alcohol, a shocking number considering the size of Taiwan's population. This high alcohol consumption rate demonstrates a marketable population.

Of the 23.5 million people in Taiwan, 47% are deficient. SNG's product potentially has over 10 million customers alone from sales in Taiwan. Though SNG's product is designed to improve life for all deficient people, middle class consumers will be especially targeted. Studies have shown that the middle class contains the heaviest drinkers and are more often found in situations where social drinking is required. The combination of these two factors, along with their financial ability to purchase SNG's product, makes them model customers.

IV. Marketing Program

Product

ALDH2 Deficiency, more commonly known as Alcohol Flushing Syndrome or Asian Glow, is characterized by East Asians' tendency to flush after a few drinks. The deficiency is caused by a genetic mutation of the ALDH2 enzyme which slows down metabolism of acetaldehyde. Ethanol metabolism primarily involves two enzymes--alcohol dehydrogenase (ADH) and aldehyde dehydrogenase (ALDH). ADH metabolizes ethanol into acetaldehyde, a substance classified as a Group 1 carcinogen. Acetaldehyde is then broken down into acetate by ALDH. Yet, due to the genetic mutation reducing the efficiency of this enzyme, when deficient East Asians drink, toxic acetaldehyde rapidly accumulates. The buildup of acetaldehyde not only increases heart rate, induce headaches, nausea, and other "drunk" symptoms, but it also greatly heightens one's cancer risks, especially in the upper digestive and head/neck regions.

SNG's product will come in the form of a lozenge - small hard candy. *E. coli* Nissle 1917 (*EcN*) is the main carrier of ALDH2*1 in SNG's product, which produces ALDH2*1 enzyme to prevent the accumulation of toxic acetaldehyde in saliva. *EcN* is one the most frequently used gram-negative oral probiotics in research and has been studied for over a century. Recently, a *New York Times* article, "Scientists are Retooling Bacteria to Cure Disease," reported that researchers have successfully inserted genes into *EcN*'s DNA, conducted human trials, and demonstrated human tolerance for the bacteria⁷. *EcN* was chosen because it is a gram-negative bacteria, which is able to easily undergo chemical transformation (unlike other gram-positive probiotic strains that are more difficult to transform). *EcN* is also regarded by the FDA as "Generally Recognized as Safe" (GRAS).

ALDH2-carrying *EcN* will be administered orally in the form of lozenges. We consulted a senior researcher at Stanford University, Dr. Che-Hong Chen, who validated our approach of targeting the upper digestive region. Our lozenge will be in the form of a hard candy that remains in the mouth to maintain its effect. Experimental data show that ALDH2*1-*EcN* bacteria produces functional ALDH2 and converts acetaldehyde at a rate of 6.37 nM/sec. Reducing acetaldehyde concentrations in the mouth will also reduce the cancer risks associated with ALDH2 Deficiency, especially in the upper digestive and head/neck region.

⁷ Zimmer, C. (2018, September 04). Scientists Are Retooling Bacteria to Cure Disease. Retrieved from <https://www.nytimes.com/2018/09/04/health/synthetic-biology-pku.html>

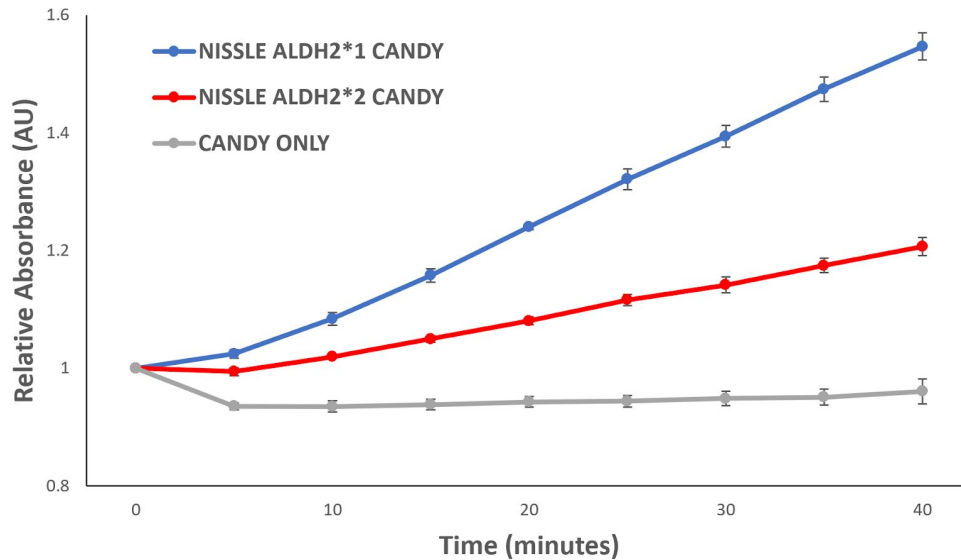


Figure 2. Our candy carrying ALDH2*1-EcN converts acetaldehyde faster than its mutant ALDH2*2 counterpart. To simulate realistic conditions, the candy was first dissolved (like it would in the mouth) before the EcN cell extracts were tested. The enzyme activity was tested in artificial saliva at 37°C (body temperature). A candy that did not contain any bacteria was used as a negative control. The results show that our probiotic candy is effective under realistic conditions and can successfully metabolize acetaldehyde. Error bars represent standard error.

Packaging

SNG's product is a probiotic throat lozenge (hard candy) that will come in a pack of 30. Since the product contains a genetically modified organism (GMO), product packaging and labeling must pass regulations set by the Taiwan Food and Drug Administration (TFDA) and the International Probiotics Association (IPA).



Figure 3. Example packaging containing individual sheets of lozenges⁸.

⁸ (n.d.). מספר זיהוי מוצר: tablet-50030529640 סוכריות לכסנויות כאב גרון שיעול מרווה פרופוליס דבש מעוין צמחים טיפות מותג פרטי-סוכריות

Retrieved from

<https://hebrew.alibaba.com/product-detail/candy-lozenges-sore-throat-lozenge-propolis-honey-sage-cough-herbal-drops-private-label-50030529640.html>

Labeling requirements for GMOs under TFDA states that “all prepackaged food, food additives, and unpackaged food containing genetically modified food material must be labeled with the terms ‘GMO’ or ‘contains GMO’” if the “content of GMO in non-GM food ingredients is greater than 3%.”⁹ As for the probiotic itself, IPA requests the following information to be described on the label: genus, species, and strain designation; minimum viable numbers of each probiotic strain at end of shelf-life; the suggested serving size, which must deliver the effective dose of probiotics related to the health claim, and proper storage conditions.

Pricing

Probiotic throat lozenges will be priced at 15 USD per packet. Each packet will consist of 30 throat lozenges. Price point was derived through detailed analysis of competitor products in the Preventative market. *Essential AD2* costs 45 USD for about 70 capsules, aimed to lower blood acetaldehyde levels for eleven nights out. *Sunset Alcohol Flush Support* is sold at 47 USD for 60 capsules, which lasts about 20 nights of drinking. Our prices are competitive against *Essential AD2* and *Sunset Alcohol Flush Support*.

Distribution Strategy

Established in 1946, Nin Jiom is an established herbal medicine manufactory with multiple throat lozenge products on the market. We would try to establish a relationship with Nin Jiom, who would be in charge of generating the final product, adding engineered probiotics provided by SNG into their candies during the cooling stage of production. Nin Jiom would also be in charge of distribution for the final product. This would be a collaboration where both parties will benefit.

SNG intends to sell its product in pharmacies, convenience stores, grocery stores, wholesale stores, and various online platforms. They would either be stocked with other lozenge/candy products, close to different alcoholic beverages, or as an impulse product near the cash register.

Promotional Strategy

SNG will advertise its product through digital advertising, social media, as well other media outlets. The ads will highlight cancer risks associated with ALDH2 Deficiency, and discuss the product’s ability to reduce these risks. SNG can also help raise awareness of ALDH2 Deficiency by distributing informational brochures at different locations, such as in clinics and universities. This can potentially increase our market size.

⁹ (n.d.)食品藥物管理署年報 Retrieved from <https://www.fda.gov.tw/Tc/siteList.aspx?sid=4051>

V. Financial Landscape

SNG's financial forecast is based on the following assumptions:

1. Taiwan's drinking population is 54% (survey results from <https://www.storm.mg/article/415034>), in which 33% is deficient and willing to purchase a probiotic treatment (our own survey results)
2. Unit price is 15 USD (450 NTD), based on cost analysis of competitor products
3. The ratio of cost and operational expenses are calculated based on Grape King Biology's 2017 financial statement.
4. To cover cost and operating expenses for the first three months, SNG has to take out a 13 million USD loan. Interest is calculated by taking 2% of the loan, based on Taiwan's current loan market.
5. Taiwan's current corporate income tax rate is 20%
6. 10% of SNG's revenue will go toward renting lab space, equipment, etc. since SNG does not own its own factory

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 |
|--------------------------|---------------|---------------|---------------|---------------|---------------|
| Revenue | \$ 60,996,135 | \$ 67,095,749 | \$ 72,463,409 | \$ 76,811,213 | \$ 79,883,662 |
| Minus: | | | | | |
| Cost | -30,662,757 | -33,729,033 | -36,427,356 | -38,612,997 | -40,157,517 |
| Operating expense | -20,799,682 | -22,879,650 | -24,710,022 | -26,192,624 | -27,240,329 |
| Gross Profit | \$ 9,533,696 | \$ 10,487,066 | \$ 11,326,031 | \$ 12,005,593 | \$ 12,485,816 |
| Minus: | | | | | |
| Non-operating expenses | | | | | |
| Rental | -6,099,614 | -6,709,575 | -7,246,341 | -7,681,121 | -7,988,366 |
| Interest expense | -257,312 | -257,312 | -257,312 | -257,312 | -257,312 |
| Income before Tax | \$ 3,176,770 | \$ 3,520,179 | \$ 3,822,378 | \$ 4,067,159 | \$ 4,240,138 |
| Minus: | | | | | |
| Tax (20%) | -635,354 | -704,036 | -764,476 | -813,432 | -848,028 |
| Net Income | \$ 2,541,416 | \$ 2,816,143 | \$ 3,057,902 | \$ 3,253,727 | \$ 3,392,111 |

VI. Challenges & Solutions

Product Certification

Since SNG's product contains genetically engineered bacteria strains, the product would have to pass the Guideline for Food Safety Assessment of Genetically Modified Foods Derived from Recombinant-DNA Organisms in accordance with Article 14 of the Act Governing Food Safety and Sanitation. SNG would also have to satisfy guidelines for products containing probiotics set by the International Probiotics Association (IPA¹⁰) and register the genetically modified organism used with the Department of Health (DOH).

The Food and Agriculture Organization (FAO) and World Health Organization (WHO) have established guidelines for probiotics in food under IPA. To certify as a health food, our product must also gain a health food license through the process set forth in the Health Food Control Act. More specifically, Article 3 stipulates that a health food permit can only be issued if one of the following regulations is met:

¹⁰ Guidelines for Probiotics in food. (n.d.). Retrieved from <http://internationalprobiotics.org/resources/guidelines/>

1. Subparagraph 1: Our product is “[d]uly supported by scientific assessment of the safety and health care effects of food that they are harmless and carry definite, certain health care effects; if current technology cannot identify ingredients contributing to such effects, the ingredients with the relevant health care effects and supporting literature shall be enumerated and provided to the central competent authority for evaluation and verification.”
2. Subparagraph 2: Our product consists of “[i]ngredients conforming to the Health Food Specification Standards set by the central competent authority.”

Finally, these claims would need to be validated in accordance with the Regulations for Application of Health Food Permit.