

Impacts of the Profession of Oenologist on Oral Health

Léa Devilliers*, Emmanuelle Fourteau, Nathalie Sibille and Pierre-Louis Teissedre

Union of Oenologists of France, France

***Corresponding author**

Léa Devilliers, Union of Oenologists of France, France.

Received: February 16, 2026; **Accepted:** February 24, 2026; **Published:** March 03, 2026**ABSTRACT**

The study presented in this doctoral thesis in dental surgery, defended in April 2024 at the University of Reims ChampagneArdenne, explores the impact of the oenologist profession and professional wine tasters on their oral health. Due to daily activities involving wine tasting, professional tasters are exposed to specific conditions that can affect tooth enamel and the oral cavity.

List of the Abbreviations

BEWE	: Basic Erosive Wear University
CCU-AH	: Chief of Clinical of the Universities- Assistant of the
CSCT Hospitals	: Clinical and Therapeutic Summary Certificate
DFGSO	: Diploma of General Training in Dental Sciences
DFASO	: Diploma of Training In-depth in Science Dental
DNO	: National Diploma of Oenologist
DUMAS	: Deposit University of Memoirs After
DV Defense	: Vertical Dimension
Document management	: Software of Management
Electronic of the INAO documents	: National Institute of Origin and Quality
INRS	: National Institute for Research and Safety
MCU- PH	: Master of Conferences of the Universities- Hospital Practitioner
MFR	: Home Family Rural
ENT	: Oto-Rhino-Laryngeal
PEB	: Ready Between PH
Libraries	: Hospital Practitioner

PU-PH	: Teacher University-Practitioner
SUDOC Hospital System	: University Documentation System
T1	: 1st Year of Thesis (= 6th HAS)
UFR	: Training and Research Unit
URCA	: University of Reims Champagne Ardennes.

Keywords: MeSH: Wine, diseases professional, erosion dental, hypersensitivity dentin, dyschromia dental.

Introduction

THE oenologists are of the professionals of their tasting, exhibits daily with sugars And to acids contents In THE wine; We We are interviewed on the incidence of this daily consumption has an impact on oral health.

French wine heritage encompasses a wide variety of wines (red, rosé, white, still, and sparkling), and we must consider their differences in composition. To better understand their effects, we will describe their constituents and analyze their impact on oral health, particularly dental erosion, dentin sensitivity, and tooth discoloration.

We will then evaluate, through a descriptive cross-sectional study, the pathologies found among these professionals, as

well as the quality of information and prevention provided to oenologists. This study will allow us to consider possibilities for raising awareness and prevention in order to limit the impact of the profession on the oral health of oenologists.

Generalities and Oenology

Definitions

Oenology is defined as "the science having for aim the study of the wines and of the grapes to leave of the analysis of their constituents and of the phenomena chemical and biological of which they are the seat. She studied their transformation of grapes in wine" This discipline encompasses Thus, the harvest, the winemaking, the blending, the storage and finally the tasting [1].

The oenologist as to has him supervise all the stadiums of their production of wine, of vine of vineyard there table. Initially, THE missions of the oenologists consisted has realize A control sanitary conditions during winemaking. Considered to be laboratory technicians, they were very few in number in cellars until the 1970s. Since then, consumption methods have evolved, and taste standards for wines have become an important part of our society. As the notion of control has now become routine, tasting has been able to take its place as a key element in determining the quality of wines [2].

The oenologist's role has therefore expanded; it now includes enhancing and ensuring the safety of the product, while also guaranteeing compliance with standards. They are also capable, during the winemaking of advice THE producer has satisfied THE desires of its clientele. He has SO in In addition to his role as an expert, he also has an economic and commercial role [2].

Composition of the Wines

Wine is a subtle marriage of different components, the proportions of which are a key requirement. Depending on the terroir and the type of wine desired, a balance must be found between acids and sugars while achieving the greatest possible richness of aromas. Its composition includes up to 600 substances, the main ones of which we will present later [3].

Water

Water represents 85 has 90% of volume. She comes mostly of their pulp of the grape itself. Its purpose is to dissolve and mix all the other constituents.

Alcohol

Its percentage varies depending on the type of wine, but it constitutes 9 to 15% of the volume. The main alcohol present in wine is ethanol, which comes from the alcoholic fermentation of sugars present In THE grapes, by THE yeasts. Her role East to bring heat and candy with wine.

THE glycerol, another alcohol, East A product secondary of their fermentation, he given As for it, it has creaminess and a powerful taste.

The Sugars

Sugars are divided into two categories: non-fermentable sugars such as arabinose and xylose, and fermentable sugars such as glucose and fructose. the essentials of the sugars present In THE

musts. These last, used by THE Yeasts, which produce alcohol, are indicators of fermentation and wine stability because their disappearance marks the end of the fermentation stage.]

For THE wines said dry, a major part of the sugars East transformed in alcohol, SO that for sweeter wines not all sugars are sweet, so residual sugars are obtained and thus its sweet taste.

The Acids

Acidity of wine se measure grace at pH, who is understood between 2.8 and 3.8.

The wine present different acids, notably THE acids tartaric Malique And citric These are the three main acids derived from grapes. These acids are products of the breakdown of sugars formed in the leaves and roots.

Other acids are present, in smaller quantities, such as lactic, succinic, and acetic acids, which are obtained through fermentation.

These components give a sensation acidity and of freshness at wine.

The Coloring Materials

The coppery color of red wines is made possible by a family of organic molecules present in plants, called Polyphenols, and in particular the subgroup of tannins. Contents initially In THE seeds And there film of fruit, their pigments are transmitted to the must during maceration. Other colorings present in the fruit, such as anthocyanins, contribute the mauve and red pigments, giving the red wine its full range of hues.

White wines do not undergo maceration, so they contain only a small number of polyphenols, unlike red wines. It is the flavones (yellow pigments) that give the wine its light color.

The Gas Carbonic

The gas carbonic (CO₂) East product at course of their fermentation alcoholic.

In still wines, it is the yeasts that produce carbon dioxide from the sugars. Since this is done in open vats, its presence is therefore rarely noticeable.

For The wines effervescent such that the champagnes THE process East different. There The first fermentation takes place in a closed vat; furthermore, a second fermentation is carried out after bottling. in bottle. This process East permit grace has the addition of yeasts and of sugar in their bottle, thus allowing the formation of carbon dioxide. All of these operations contribute to the formation of the effervescence of Champagne wine.

From a taste perspective, it should be noted that carbon dioxide plays an important role in the balance because he potentiates the effect of the tannins in giving a sensation acidity, bitterness and astringency in wine.

Sulphur dioxide

This gas East Also called dioxide of sulfur or sulphite. He East naturally here in grapes in small quantity, but he East also added

In THE must for his virtue's antioxidant, stabilizer and taste. However, has doses abusive he can be had the origin of a taste sulfuric.

Like anthocyanins and tannins, sulfur dioxide plays a role in wine preservation, thanks to its antioxidant properties by binding oxygen molecules. The benefit of this component is to maintain certain O₂ levels. to limit oxidation and accelerated aging of the wine.

The substances Organic and minerals

The various organic and mineral components come mainly from the soil and are partly represented by potassium, sulfur, phosphorus, iron, copper, zinc, and chlorine. They play a significant role in the flavor of the wine, giving it a sensation of minerality and savoriness.

The vitamins

These are the vitamins formed by the grapes and preserved in the wine. They include, in particular, vitamins from groups B and C.

Methods of Winemaking

The Wines Red and Rosé

Contrary to popular belief, red winemaking is essentially carried out using black grapes with white juice.

After a year maintenance of vineyard has place their harvest, between THE month of August And THE September.

For THE wines red, THE grapes are strides for to go out THE must. The set will be put in vat in order to to obtain their maceration Who will bring at wine his aromas and its color characteristic. It is during of this stage that THE wines reds and rosés of maceration se differentiate. In effect, the maceration of rosé wines made using the saignée method is measured in hours, whereas it is measured in days for red wines.

Following has their first fermentation; THE wine will be extract of their tank (wine of drop) And THE The grape marc will be pressed (press wine). This is richer in color and tannins.

At course of this stage on carried out also a technical of reassembly or punching down, which consists of mixing the solid parts on the surface (skin and seeds) with the juice within the vat itself.

At this stage, a second fermentation, known as " malolactic " can be done according to the type of wine desired by the producer. The " malo will naturally reduce acidity for get of the wine's rounder and softer. If At opposite THE choice East to obtain for a more vibrant wine, this fermentation will be blocked.

THE extraction will be Next carried out; he consists has separate THE juice of their part solid. At term of This process, THE wine will be place in tank or in was during a few weeks Or a few years.

After a period of aging, the wine will be bottled for sale. However, the winemaker will have the option of extending the aging period in the bottle.

The White Wine

There method of winemaking of wine white differs some little of wine red. In Indeed, there is no maceration during the production process in order to limit the tannin intake.

Just as with red wines, white wines will then be stored in vats or barrels to carry out fermentation.

The Champagne

In Champagne there winemaking East different. At moment of their harvest, THE bunches whole is in a hurry, grape variety by grape variety and believed by believed. THE pressing se do delicately for extract the juice while avoiding prolonged contact with the skins to prevent staining. the vintage "(except for macerated wines).

The juice obtained is stored in a tank where the sulfiting process will take place. Thanks to its antiseptic and antioxidant properties, sulfite helps to preserve the sensory characteristics of the wine.

The first fermentation, known as " alcoholic "will take place in the vat. The second fermentation, called " malolactic ", as for the winemaker, it is a matter of choice, just as with the production of red wines.

In beginning year has place there tasting of the wines clear, It is has This moment accurate that THE The role of the consulting oenologist becomes crucial when creating blends. A multitude of possibilities then open up to the winemaker to compose the cuvées using different grape varieties, crus, and vintages.

Next comes the bottling stage. A second fermentation, this time carried out in the bottle, creates the unique character of champagne. Yeast and sugar are added to produce carbon dioxide, which is retained in the bottle, allowing the effervescence (prise de mousse) to occur.

A minimum of 15 months in the cellar and 3 years for vintage wines will be required to begin the riddling and disgorging stages before marketing [4].

Vineyards French And factors of variations

Vineyards And Grape Varieties

THE terroir French East recognized for their diversity of his wines, notably allowed grace to the variability of vineyards and grape varieties. In France there are more than 200 grape varieties (5). Each is associated with soils, characteristic microclimates and ancestral cultural practices, combined with a personal winemaking technique, allowing French wines to reveal all their diversity.

Climate

Climatic factors, such as sunshine, temperature, and humidity, are factors that influence the acidity of wines.

There France possessed A climate temperate characterized by A winter cold And A summer hot, but without large temperature variations.

In effect below the effect of their light, THE leaves of their vine are going allow there synthesis of sugars through photosynthesis.

Thus, the more sunshine there is, the richer the wine will be in sugars. HAS know that THE plants exhibit at south, on of strong slopes will be likely to be more exposed to the sun and therefore will see the grapes with reduced acidity.

There rainfall has also An impact on their concentration in sugar. A contribution in Too little water causes water stress, thus blocking the ripening of the grapes. Conversely, if it is too much, the grapes become less sweet, more acidic, and low in phenolic compounds.

Faced with these climatic hazards that can alter the composition of wines, oenologists and winegrowers must join forces to harmonize the vintages.

Floors

Just like climate, geological characteristics are important in winemaking. Even if it's difficult to assess through tasting, sandy soils will produce wines lightweight has there maturation early, THE gravel brought him, of their finesse. As to to floors Chalky soils produce more supple wines, unlike clay soils which impart more heaviness. [6].

Methods Conservation

It should also be noted that the breeding technique influences the organoleptic characteristics.

Choosing to store the product in a tank allows for neutral taste, but also practicality in terms of storage, cleaning and cost.

Conversely, barrel aging is more technical, demanding, and expensive, but it offers greater variability in flavor. The type of wood chosen, the aging period, and the intensity of the toasting all contribute to influencing the aromas and flavors. Indeed, a wide range of tastes can be achieved, such as vanilla, cocoa, nuts, pepper, and more.

Steps of Tasting

One of the main activities of the oenologist is to guide producers during the winemaking process. In Champagne by example, they intervene notably in period of harvest as well as at the time of bottling during the tasting of the still wines.

There session of tasting East dictation by A together of conditions.

Firstly, the ideal time for a tasting is before a meal, at 11am or even has 6 p.m. because he agrees of realize there session has distance of all substance able alter taste perceptions and modify oral pH. Regarding the tasting room, it must be well-lit, without color distortion, and also free of any extraneous odors. temperature of there piece as to has She born must not exceed 18 has 20°C (7). There session must Start with a glass of water to neutralize the taste. Also, eat slowly. A piece of bread would of to clean all THE residues able TO DO fluctuate the sensations.

Regarding the container, during official tastings, an INAO glass rinsed with water and without detergent is used (Figure 1):

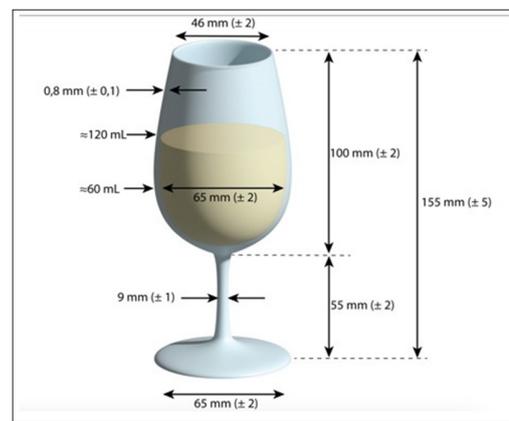


Figure 1: Diagram of a glass INAO (Courtesy of Professor Pierre Millet)

There tasting must respect several steps, each of them do call has A of our sense.

Their view

The oenologist begins by observing the wine's color, which can provide clues about its concentration and intensity. This step helps determine its aging potential. It's important to distinguish between red wines, which lose color as they age, and white wines, which, conversely, deepen in color over time.

Secondly, he explores the clarity wine, that's has said the absence of deposit or small suspended particles. It can have a shiny, bright, or dull appearance.

Finally, by tilting the glass, the oenologist can assess the wine's fluidity, which can be viscous, thick, or fluid [6].

The Sense of Smell

THE second time of their tasting do call to the sense of smell.

Anatomically, olfactory qualities are transmitted via the olfactory bulb located in the upper part of the nose. The odor molecules must be in the form of volatile ethers in order to be captured by the bulb. Wines described as "simple" have a lower olfactory intensity, the so-called "wines" complexes " are characterized by the abundance of their aromas. He East also important of note that THE taste and the sense of smell are related. All alteration the perception of smell will modify the sensation of taste.

Regarding the proper technique, wine is first analyzed in a static state to detect the most delicate aromas. Then, with a rotating motion, the glass is used to increase the surface area for evaporation, thus allowing all the aromas to reach our senses.

We we distinguish THE aromas primary Who come of fruit, of vegetal; aromas secondary Who result of their winemaking and of their fermentation; And of the aromas tertiary factors, which in turn come from the choice of wine storage method: barrel, vat or bottle.

The Taste

The stage next of their tasting correspond has their perception taste. THE wine East then rotate in the mouth for 15 to 20 seconds to increase contact with the oral tissues.

In addition to the 4 basic tastes, the mouth is sensitive to the temperature of the wine, its viscosity, the presence or absence of carbon dioxide, and astringency.

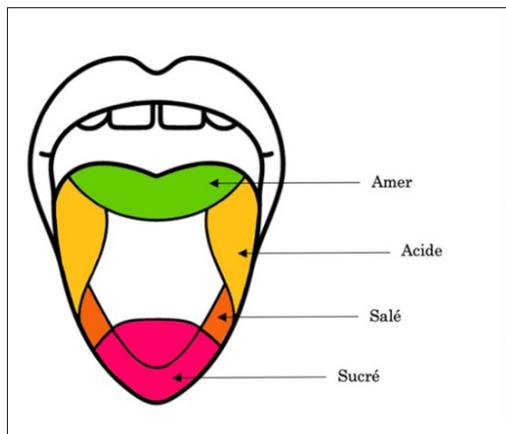


Figure 2: Mapping of their language according to THE flavors (plan staff)

The taste buds on the back of the tongue are responsible for detecting flavors. They are sensitive to only four basic tastes: bitter, sour, sweet, and salty. However, it is possible to map the dorsal surface of the tongue according to sensitivity to each of these tastes. Taste buds are most sensitive to bitter flavors.

Rear of the lingual V acidic in the middle region and edges of the tongue salty on the tip and edges of the tongue and finally sweet on the tip of the tongue (Figure 2).

But in reality, he it is instead of gradients, because each papilla answers has all THE flavors vary in importance, there is simply a preferential sensitivity; hence the importance of mixing the wine well in the mouth.

The to Touch

For finish, it is their sensation touchscreen Who East evaluated during of there tasting. Several criteria are has taken in account, notably astringency. This one basically found In wines red, East due has A excess Or An imbalance of tannins in their composition of wine. This will create a rough sensation on the mucous membranes and therefore a sensation of mouth dried. She East intimately linked At rate of alcohol, of sugar, acidity And of Wine aging [6].

Similarly, the effervescence gives a tingling sensation on the tongue and palate, this is due to the presence of carbon dioxide.

Several adjectives allow Thus of define their texture of wine; this one can be described as supple, oily, smooth, rough.

Thus, during the tasting of each wine, each previously defined criterion is evaluated and listed on a tasting sheet (Appendix 1).

There tasting: Functioning Neurophysiological

During of their tasting, several receptors nervous present on THE mucous membranes And Oral tissues come into play. First, there are the chemoreceptors, which are involved in taste and smell. Then there are the mechanoreceptors for texture in the mouth,

the thermoreceptors for temperature, and finally the nociceptors for the sensation of spiciness.

We we will explain more in details here THE chemoreceptors, responsible of taste:

Taste buds are like sensors, numbering in the thousands, and there are several categories, defined according to their shape:

- Conical (cones)
- Fungiformes (mushroom): has their part previous of their language
- Calyx-like (calyx): on the lingual V (these are the largest, up to 250 buds per papilla)
- Madness (leaf): on the edge of their language

These taste buds present THE buds of taste Who see locate basically on THE lower surfaces and superior of their language, of the gums, of the mucous membrane’s labials, cheekbones, palatine and esophageal.

On account 100 has 200 buds of taste by papilla either, between 2000 And 5000 taste buds on the edge of the tongue in young subjects (compared to 1/3 in older subjects).

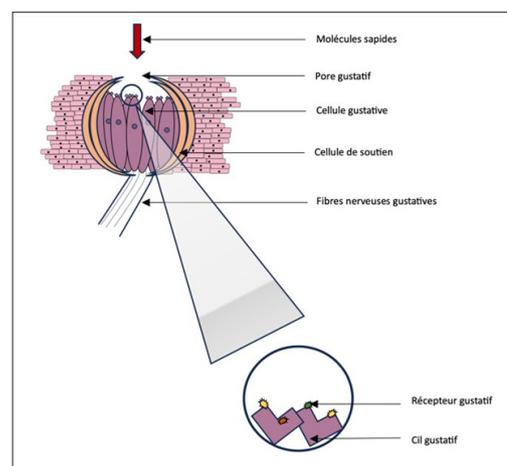


Figure 3: Diagram of anatomy of a bud taste (plan staff)

Each bud measures approximately 70 microns. It is made up of 4 types of cells: basal cells, supporting cells, type 1/type 2 cells, and finally type 3 cells. (Figure 3)

We will now describe the neurophysiological circuit that takes place during taste, from the taste bud to the perception of the flavor by the cerebral cortex [8].

These are THE cells of kind 3 of bud Who intervene in their reception taste buds. They have microvilli on the external taste bud pore, in contact with the oral cavity.

A taste stimulus will then be introduced. If it is salty or sour, it will activate ion channels; if it is bitter or sweet, it will generate protein interactions.

An influx of ions into the cell will generate an action potential and a release of neurotransmitters, which will create a nerve signal.

This signal will then be transmitted to the afferent neurons. It's worth remembering that the tongue is divided into sections according to tastes and that the innervation of the tongue in the anterior third is carried out by THE nerve Facial VII bis, And THE 2/3 posterior by THE Glossopharyngeal IX. These 2 nerves join Next THE core beam lonely (also called core (taste) located at at the level of the brainstem. They then reach a nucleus of the thalamus via an axon.

Finally, THE neurons thalamocortical are going se project on an area specific of cerebral cortex dedicated has there sensation taste (THE cortex somato-sensory). They see project also in other areas of the brain to perform memory encoding. They therefore give an affective and emotional dimension (via the insular cortex) (Figure 4).

Tasting is therefore linked to the brain and consequently to memory, a great quality sought after by oenologists.

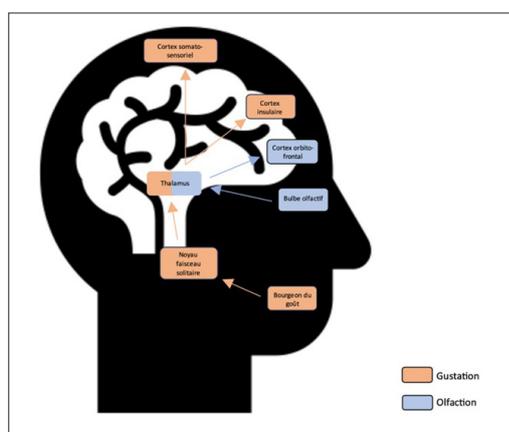


Figure 4: Diagram of circuit neurological of taste and of the sense of smell (plan staff)

Impacts of wine on their health oral and dental

Balance of pH salivary

Saliva is a biological fluid secreted 95% by the so-called main salivary glands (parotid, submandibular, sublingual) and 5% by the so-called accessory glands. distributed In THE mucous membrane's labials, palatine and lingual. THE Speed salivary the total secretion from these glands is approximately 1.2 ml per minute. It should be noted that its average pH, without any stimulation, is between 5.75 and 6.15; it is approximately 7.2 after stimulation.

There saliva East constituted has 99.4% water and <1% of substances organic and minerals.

She has several roles, the one to moisten and lubricate THE food, but has also their purpose been to maintain a stable pH and to protect the oral cavity from bacterial and viral attacks [9].

The Components of Saliva

Substances Organic

There phase organic includes notably of the proteins enzymatic such as α -amylase, a digestive enzyme that alone represents 40 to 50% of salivary proteins. It allows the hydrolysis of cooked starch present in the food bolus.

There mucin East a O-glycoprotein upholstery THE mucous membranes with its barrier Viscous and lubricating. It thus provides protection against endogenous or exogenous attacks. PRPs (proline-rich proteins) participate in the formation of the exogenous acquired pellicle, in calcium homeostasis, and in the lubrication of soft tissues during chewing. They have also their ability of se bind to tannins And of THE trap by protein folding, thus leading to the sensation of astringency.

In addition to its antibacterial properties, statherin inhibits the precipitation of calcium phosphate and the growth of hydroxyapatite crystals. This function thus prevents the formation of salivary gland stones.

Kallikreins are enzymes that produce a peptide, kinin, which is involved in many biological activities such as vasodilation during inflammation.

Anhydrase carbonic East a metalloenzyme Who between in game In THE system Carbonate acid/carbonate buffer, allowing regulation of salivary pH. Finally, there saliva includes also other agents of their defense immune such as immunoglobulins (IgA, IgM, IgG), lysosomes, lactoferrins, leukotaxins and lactoperoxidase.

Substances minerals

Of the electrolytes such that THE ions sodium (Na^+), chloride (Cl^-), bicarbonate (HCO_3^-) are present in saliva for proper cell function. Other compounds such as calcium ions (Ca^{2+}) and phosphates (PO_4^{3-}) are involved in remineralization processes. of the crystals of hydroxyapatites present in enamel following has a attack acid.

Buffer capacity

There saliva has their ability of maintain A pH stable grace At power buffer. A A buffer solution is defined as a solution containing both a weak acid and salts (an electronically neutral ionic compound containing both cations and anions). It therefore has the ability to control THE variations of pH induced by of the substance's acids or basics. In THE frame In our study, we are interested in acid attacks because we know that the pH of wine is in average Understood between 2.8 And 3.8. He East has note than below of a value of 5.5 The enamel weakens and becomes more susceptible to the development of certain diseases of microbial origin (leading to the formation of carious lesions) but also to erosions.

In mouth, It is notably THE system acid carbonic/bicarbonate Who between in game:



Principles you Power Buffer

During food consumption, an H^+ ion (acid) is added to the oral environment The secreted saliva will provide bicarbonate (HCO_3^-) via carbonic anhydrase. The association of H^+ and HCO_3^- go SO form of acid carbonic (H_2CO_3), Who East A acid weak. This acid weak va Next se decompose in water (H_2O) And in dioxide of carbon (CO_2). THE CO_2 below shape gas go see clear, and water go stay in situation. On obtains SO an

elimination complete of the initial acid (H^+), making this the most effective buffer system in the oral cavity.

Phenomenon of demineralization during of an acid attack

Robert Stephan studied the effects of salivary pH variations on enamel demineralization/remineralization. In 1943, he published a curve illustrating the variations in oral pH over time after sugar consumption (Figure 5):

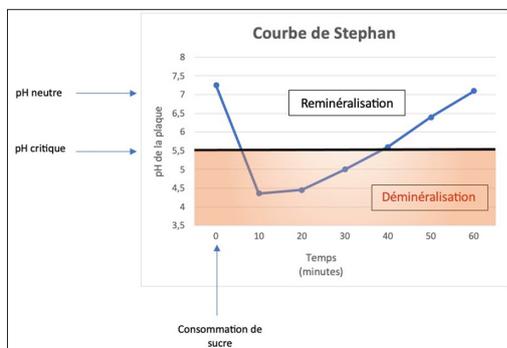


Figure 5: Curve of Stephan (plan staff)

According to his study, during diet, the intake of H^+ ions leads to a decrease of pH salivary. When this one East below THE rate of 5.5, he passes below THE threshold said "critical", the solubility of hydroxyapatite crystals increases, which causes demineralization of enamel. In THE terms physiological normal, following has this When an attack occurs, the buffering capacity of salivary carbonic acid/bicarbonate intervenes to counteract this acidity. The pH then rises above the critical threshold and enamel remineralization takes place.

At neutral pH, hydroxyapatite crystals are poorly soluble because of an ionic equilibrium between Ca^{2+} and PO_4^{3-} is established. Conversely, with repeated consumption of sugary foods or drinks, the pH remains low for an extended period, prolonging the demineralization phase and hindering enamel remineralization. This is the period when the pH is considered critical. East of 30-40 min, during This time, enamel East likely to attacks acids, he must Therefore, wait approximately 40 minutes for the pH to return to its standard value.

Phenomenon Remineralization

There remineralization East allowed grace has their re-precipitation of compounds phosphocalcic compounds on an altered but existing mineral matrix. These compounds present in saliva are constitutive of hydroxyapatite and precipitate has their surface of enamel. Of more, there presence Fluoride ions, supplied in particular by fluoride toothpastes, will limit demineralization and promote the remineralization of enamel. The fluoride ions will insert themselves into calcium phosphate crystals, thus forming fluorinated hydroxyapatite (called fluorohydroxyapatite). These ions decrease THE pH critical, passing of 5.5 has 4.5, there making then more resistant to future acid attacks.

However, this remineralization born allow Unfortunately not a repair ad integrum of the enamel. It is accepted from a macroscopic point of view because of the resistance of the enamel East restored, but She born allow not of re-form their structure microscopic initial damaged tissue.

Furthermore, in the case of erosion, demineralization is rapid and superficial. If the process is limited to the interprismatic enamel, re-precipitation is possible; however, if the intraprismatic enamel is affected, the process becomes irreversible. Initial treatments possible In THE frame of the erosions born can SO more restore THE fabric and can only stabilize the loss of substance.

Erosions

Erosion is the superficial destruction of the hard components of the tooth. This destruction does not involve bacteria; it is due to acid exposure from various factors. extrinsic or intrinsic. As defines previously, we soap that THE pH Salivary flow and other factors are contributing to the development of these erosive lesions. However, other risk factors exist, notably sex (men are more affected than women).

But also, certain general pathologies such as alcoholism, anorexia-bulimia, or gastric reflux [10].

Furthermore, as described previously, we know that food hygiene has a place important in the incidence of the lesions erosive. In case contributions repeated and extended drinks sweet or acids, THE power buffer of their saliva East exceeds weakening Thus their dental surface. In the early stages, erosion reaches the first enamel layer, giving it a translucent and smooth appearance; cracks or small fractures may also appear. However, in more advanced stages, concavities form, extending to dentin exposure and thus dentin tubules. This can cause uncomfortable, even debilitating, pain and hypersensitivity for the patient.

The BEWE (Basic Erosive Wear Examination) index was created to help practitioners quantify the loss of substance during clinical examination and also provides preventive and restorative recommendations according to the stage.

In practical, that consists has assess the attack of each of the faces of a tooth, And This on each sextant. For each, the highest degree is noted, then the results per sextant are added together to obtain a final score.

Value 0: Not wear and tear erosive of their tooth

Value 1: Beginning of their loss of their texture of surface

Value 2: Default net, destruction of the fabrics hard involving < 50% of their Surface Value 3: Loss of hard tissues > 50% of the surface area (Figure 6)

HAS note that for the values 2 And 3, the dentine East often exposed.



Figure 6: Photographs cliniques of lesions erosive of kind severe (Courtesy of Dr. Maéva Chibane)

These erosions can generate a default aesthetic, of occlusion, a loss of DV, Hypersensitivity, or even pulp exposure, is a possibility. Depending on the final score, a different treatment plan is developed. This begins with close monitoring, combined with education on oral and dietary hygiene. For minor cases, a fluoride varnish can be applied. Finally, for more severe cases, restorations can be performed depending on the extent of tissue loss. Ranging from composite to ceramic reconstruction with inlays/onlays/veneers/crowns.

Impact in Oenology

We were interviewed if a link was established between the frequency of the tastings and the incidence of dental erosion. A study published by Roy George and colleagues in the Scientific World Journal in 2014 was conducted on Australian winemakers to establish a link between daily wine consumption among professionals and the occurrence of dental erosion [11]. This study included 25 tasters professionals. THE criteria of age, sex, years of practice, number of sips tasted per day ($m = 18$) and the quality of oral hygiene were recorded.

THE researchers have accomplished a clinical exam evaluating the importance of erosion according to the modified Smith and Knight index (tooth wear index).

Conclusion of the Study

Participants with less than 10 years of experience presented significantly fewer erosions compared to those with more than 10 years of experience, both in terms of the number of erosive lesions recorded and their severity.

The topics young people were suffering less erosion than THE topics more aged.

We however assume a bias study. This impact augmented at the house of the increased prevalence in more experienced and older subjects may be due to two factors: either the accumulation of consumption of wine due to their seniority exercise, either has a wear natural of the teeth with age, thus making the study not significant.

However, another study by Wiktorsson et al., published in 2007 (12), also concluded has an increase of their prevalence of erosion at the house of THE oenologists. This study has been done at the house of 19 experts in Sweden. THE results admit that 14 of them exhibited erosions, ranging in severity from mild to severe. It was also shown that the severity increased with the number of years of experience.

Influence of the Type of Wine

We hypothesized that the type of wine could influence the appearance of erosive lesions. A study conducted by Brita Willershausen, published in 2009 (13), aimed precisely to compare the erosive potential of red wines versus white wines. This *in vitro* study involved selecting four red wines and four white wines and immersing extracted permanent teeth in them for 24 hours. Following this exposure, the researchers then determined their quantity of calcium released by colorimetry and evaluated their roughness of surface after exposure with a profilometer. He has reported that after 24 hours, GOOD that THE Surface roughness values were similar ($2.67 \pm 0.92 \mu\text{m}$ for white wines versus $2.64 \pm 0.66 \mu\text{m}$ for red wines);

researchers noted a significant release of calcium higher in THE wine's whites than THE wines red, [$8.74-28.56$] mg.dL^{-1} . 25 mm^{-2} against [$4.85-19.43$] mg.dL^{-1} . 25 mm^{-2} . He has SO summer concluded that THE wines whites have a higher erosive potential than red wines.

Although these studies demonstrate the incidence of dental erosion among oenologists East augmented, this one is not recognized as a disease professional official according to THE painting of the diseases professional given by INRS [14]. Registration on the board would thus allow for regular oral and dental monitoring by occupational medicine as well as better financial coverage of dental care for this population.

Hypersensitivities dentin

Dental sensitivities, also called dentin hypersensitivities, are defined as brief, acute pains caused by a stimulus, whether thermal, electrical (bimetalism), or chemical (acidic or sugary solutions). This hypersensitivity is due to exposure of the subenamel layer, the dentin. Two etiologies are possible: a denudation root (ex: recession periodontal) Or enamel wear (e.g., abrasion, attrition, erosion).

In effect, there is dentine present in the 1/3 internal of the fibers nervous of origin pulp, which explains why, during its exposure, communication occurs between the oral cavity and the pulp. Of the modifications hydrodynamic at the breast of the fluids intradentin se then produce and are at the origin of alterations or stimulations of nerve fibers, therefore nociceptive signals.

These hypersensitivities touch a large part of their population, an estimate. The exact prevalence is difficult to obtain, but approximately 12.5% of people suffer from tooth sensitivity [15]. This is particularly true for winemakers, who are heavily exposed to acidic and sugary drinks.

Hair Coloring

The enamel dental East a fabric porous, and THE wine East a chromogenic, his pigments have therefore tended to infiltrate and cause discoloration. According to Nathoo's 1997 classification, wine produces direct extrinsic N1-type staining, meaning that the chromogenic agent, in this case wine, adheres to the tooth surface and transfers its own color [10]. It is worth remembering that the color of the wine itself is due to polyphenols, more specifically to anthocyanins for red wines.

Diseases Periodontal

The tooth's attachment system, called the periodontium, includes the gums, the periodontal ligament, the cementum, and the alveolar bone. Periodontal health is defined during a clinical examination. by a absence of bleeding at survey, of poached periodontal and of loss attachment.

Periodontal disease, also called periodontopathy, is a chronic, multifactorial inflammatory disease associated with dysbiosis of the bacterial biofilm, leading to damage to the supporting tissues of the tooth. This damage is caused by an inappropriate and usually excessive immune-inflammatory response of the host [16].

THE Periodoant Diseases include Several Pathologies

There gingivitis reached uniquely their gum. There destruction tissue East said " reversible » because THE recovery of a good hygiene dental and a decrease of the plaque index allows a return to periodontal health. Conversely, periodontitis is described as " irreversible ", because it damages the gums but She partners also has a loss attachment and a loss bony. There classification of Periodontitis was revisited at the 2017 Chicago World Consensus Conference. Based on several clinical criteria, it is defined by a stage characterizing the severity and extent of the pathology, and a grade describing its possible progression [17].

A bad hygiene oral health And a accumulation of plate are has the origin of this bacterial infection. However, other factors increase the risk of developing periodontal disease, including genetic and hormonal factors, as well as systemic diseases (e.g., diabetes) and lifestyle (e.g., smoking). Besides hygiene oral health, note that the effect of there molecule ethanol here in alcoholic beverages causes several adverse effects on the physiology of the body, thus impacting oral health.

Ethanol basically metabolized by THE liver, acted of way harmful on THE liver functions, particularly in the synthesis of vitamin K. Since vitamin K is involved in the proper functioning of certain coagulation factors, its alteration therefore leads to a risk of hemorrhage in the patient and a risk of bleeding gums upon probing.

Furthermore, there is a dysfunction of macrophages, lymphocytes, and neutrophils involved in the immune system. The patient is therefore at risk of infection and thus has increased susceptibility to periodontal infections. In their study epidemiological published in 2001, Tezal Mine And coll. (18) have compared the impact of frequent alcohol consumption on periodontal health.

Since most studies focus on extreme consumption (in the context of alcoholism), the authors here wanted to turn to a population with more moderate consumption. The study has summer done on 1371 topics, In the State of New York to United States. To include cases in the study, they were asked about their weekly alcohol consumption via a questionnaire. They were then classified into 4 categories:

- Less of 5 glasses per week
- At less 5 glasses per week
- Less of 10 glasses per week
- At less 10 glasses per week

The authors then studied different parameters: gingival bleeding, loss of attachment, bone loss and the presence of subgingival microorganisms. A cross-sectional study was conducted, and the results show that the percentage of tartar is higher in patients with greater alcohol consumption. weekly by report At band of more weak consumption. Of even, there Loss of attachment and bone loss follow the same trend, they are higher in patients with higher alcohol consumption.

For sustain this assumption, a review systematic conducted by Amaral and coll [19]. Published in 2009, approaches the association between consumption of alcohol, dependence and periodontitis. On the whole of the items studied, 16 have

answered to criteria of inclusion. Among them, 7 addressing alcohol consumption reported a positive association between alcohol and periodontitis. The same is true for the 4 studies based on alcohol dependence. In conclusion of this review, ethanol acting on THE defenses immune system of the host, he can be considered as a risk indicator for periodontitis.

However, a study done At Denmark by J. Kongstad And col [20]. has demonstrated This time, the focus is on the beneficial effect of alcohol consumption on periodontal health. Clinical evaluation criteria are based on attachment loss and bleeding upon probing. The study included 1521 topics, their health periodontal has summer evaluated via An exam clinical data and alcohol consumption were collected via a questionnaire.

THE results obtained concerning their loss attachment demonstrate A odds ratio lower for men with low alcohol consumption compared to abstinent men. For THE bleeding at survey, he East determined has +25% at the house of THE men abstinent by report to band of consumption light (1 has 13 drinks/ week). The study se concluded in claiming that higher wine consumption is inversely associated with loss of attachment.

Given the contradictions present in these studies, it is difficult to prove the effect of alcohol on periodontal disease. Some demonstrate a negative impact on periodontal health, others conclude that there are no significant differences, and still others report a protective effect of alcohol consumption.

Of more, we note that too much little studies have addressed the impact of their tasting of Wines and their effect on periodontal health. We know that metabolized ethanol causes liver damage and therefore a risk of bleeding and infection in the consumer. These effects are observed in patients with high alcohol consumption, particularly in cases of alcoholism, often associated with poor hygiene and behavioral habits.

On the other hand, since winemakers tend to spit out wine, we can hypothesize that it has no significant effect on their systems and therefore on the incidence of periodontal disease. The prevalence of periodontal disease among winemakers would be primarily due to age and behavioral factors (oral hygiene, regular dental checkups, and tobacco use).

Cancers ENT

Alcohol is considered a carcinogen by the IARC (International Agency for Research on Cancer). It has been shown that the incidence of head and neck cancers was augmented by their consumption daily of substances alcoholics. At the house of THE alcohol-dependent patients, THE cancers of their sphere ENT THE more recorded are those of the hypopharynx, the oropharynx and the oral cavity [21]. But what is the mechanism behind this risk?

When alcohol is consumed, the ethanol molecule follows two different pathways. first (20%) born go not undergo of transformation metabolic, She go be eliminated by urine, perspiration, and exhaled air.

There second (80%) go be metabolized by the organization for form of Acetaldehyde (also called ethanal), which is a

carcinogenic molecule. It damages hematopoietic stem cells and interacts with DNA, causing mutations (chromosomal breaks and rearrangements). It also inhibits chromosomal repair. of DNA in acting on their protein p53 (embarrassed suppressor of tumor). He goes on the other hand release of the radicals free Who are going act on THE cells of the organism, to modify their DNA, their proteins and lipids; going until induce their apoptosis (dead cellular programmed), and therefore the formation of malignant cells.

THE CCDUS (Center Canadian on THE Addictions And Use of Substances) has accomplished In January 2023, a public

health study (22) was conducted. The goal was to develop new recommendations regarding alcohol consumption in Canada, in order to establish guidelines concerning THE good practices in matter of consumption, they have First of all evaluated THE harmful effects caused by alcoholic beverages. No distinction was made based on the type of alcohol present in wine, beer, spirits, and others. In the table below (Table I), we can observe the increased risk of developing oral cavity tumors in adequacy with the increase of their consumption alcohol weekly. Because according to their data, there consumption of a alone glass alcohol by week would increase THE risk of 5.1% versus 338.4% when consuming 35 glasses per week.

Table 1: Risk of diseases at the house of THE men, in function of their Weekly alcohol consumption (number of standard drinks per week)

Number of glasses standards by week	1	5	14	21	35
Infections of the lanes respiratory	1.0%	4.9%	13.7%	21.0%	37.6%
lower Tumor malignant of there cavity oral and of the pharynx Tumor malignant of the esophagus	5.1%	27.6%	89.4%	152.3%	338.4%
Tumor malignant of liver	2.7%	14.1%	42.7%	69.1%	139.3%
Tumor malignant of breast	0.8%	4.0%	11.2%	17.0%	30.1%
Tumor malignant of larynx	0%	0%	0%	0%	0%
Tumor malignant of larynx	3.0%	15.5%	46.3%	73.8%	143.5%

Therefore, when consulting with these at-risk patients, it is important that the dentist performs a thorough examination of the oral mucosa. Certain signs should raise concern, such as unexplained tooth mobility, halitosis, lymphadenopathy, dysphagia, labial paresthesia, odynophagia, or trismus. THE carcinoma epidermoid represents their tumor malignant there more frequently found from there cavity oral. He East clinically characterized by a ulceration has edges thick, Irregular, raised, and raw towards the inside. The base of the lesion is budding, necrotic, or even bleeding. Clinically, it appears as a vegetating, ulcero-vegetating, nodular, or fissured lesion (Figure 7).



Figure 7: Photograph clinical of a carcinoma epidermoid located on THE lateral edge of the tongue.

(Courtesy of Dr. Stéphane Derruau - University Hospital of Reims)

THE diagnosis positive of carcinoma epidermoid se do uniquely grace has their biopsy and the histopathological examination. In the event of positive test results, the dentist must SO address THE patient towards A service competent in their socket in charge of the cancers ENT, particularly in oncology, maxillofacial surgery or ENT surgery. Further evaluation requires a staging assessment to look for possible metastases (lungs, bones, liver, brain).

The appropriate treatment will then be defined in a multidisciplinary consultation meeting bringing together an ENT surgeon and dentist, a radiation oncologist and a medical oncologist. The main treatments are determined according to THE stadium devolution, able to bring has a intervention surgical (complete excision of the lesion) associated or not with chemotherapy or radiotherapy [23].

As part of their profession, the majority of oenologists spit out the wine; however, many of them have a detectable blood alcohol level following tasting sessions. none study current born proves excess of risk of cancer oral at the house of this population; chronic alcohol consumption allows bacteria in the oral flora to produce acetaldehyde in quantity important And SO THE development of lesions precancerous. In France, 80% of head and neck cancers are linked to alcohol, tobacco, and poor oral hygiene [24]. It is therefore essential for professionals in the wine and spirits industry to have regular checkups with a dentist to detect any malignant disease as early as possible.

Investigation Descriptive with of the Oenologists

To support our hypotheses regarding dental pathologies frequently encountered among oenologists, we decided to conduct a descriptive cross-sectional study. A similar survey was previously carried out by Estelle Préaubert on the effects of champagne tasting on the oral cavity of oenologists [25]. As this study dates from 2012, we chose to conduct a new, nationwide questionnaire to update the data.

Goals of the Study

The main objective of the study was therefore to obtain new data on dental and periodontal pathologies found in oenologists. As for secondary objectives, we sought to obtain information on their tasting habits and oral hygiene. It was also important for us to identify occupational risk factors for oral health. Finally, we wanted to assess the quality of the prevention measures implemented in this population.

Materials and Methods

For realize this study, THE topics have summer interviewed via A quiz in line thanks to the Google Forms interface.

This anonymous questionnaire, aimed at professional or trainee oenologists, included 27 questions, basically of the answers short, answers by yes/no or multiple choice again. Different themes were addressed, starting with general questions to identify the type of population (age, sex, locality, years of experience). We then asked the oenologists about their tasting habits (frequency, types of wines tasted, tasting rituals). Some questions then focused on their dietary and oral hygiene (consumption outside of work, techniques). And products oral health used, follow up at the house of A dentist...). Finally, there last thematic approached their prevention in matter of health oral done At during their studies or professional activity.

We contacted the National Union of Oenologists, which, after validation, agreed to distribute our questionnaire via a newsletter. This was sent to 3,760 oenologists who responded between July 13 and August 15, 2023. In the descriptive statistical analysis, means and standard deviations (SD) were calculated for quantitative variables. For qualitative variables, frequencies and percentages (N (%)) were calculated. Finally, For This Who East of the analysis etiological A exact test of Fisher has summer used.

Results

Features of the Population

- **Effective Total:** 415 responses
- **Rate of Answer:** 11%
- **Criteria Inclusion:** oenologists assets, retirees Or in training
- **Age Average:** 42.4 years (AND (= 13.47 years)
- **Seniority Average:** 17.3 years activity (AND (= 13.3 years)
- **Age Means of Start of Activity:** 25.1 years (AND (= 3.92 years)
- **Sex** 47.7 % of men and 52.3% of women
- **Distribution geographical:** In order to of determine their distribution geographical of OUR sample of population, we have interviewed THE oenologists on their) region(s) exercise (Figure 8). We know that oenologists tend to travel During their activity, the choice of geographical location was therefore not exclusive. Furthermore, other locations were identified outside metropolitan France, namely Italy, Spain, Switzerland or even Canada.

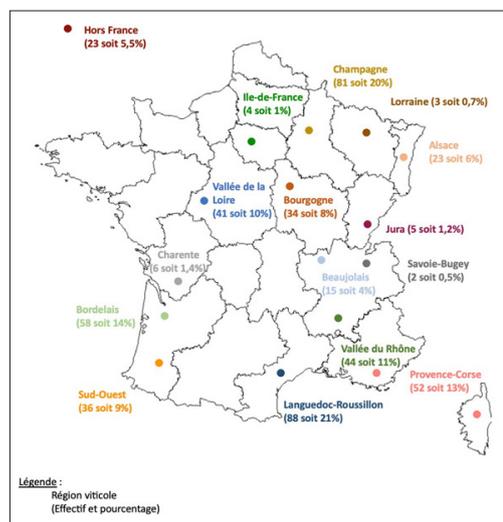


Figure 8: Distribution géographique de l'échantillon

Habits Tasting

Frequency Tasting

We have questioned THE oenologists on THE number AVERAGE of samples tasted per session. The average result obtained is 18.08 samples (SD = 16.47 samples). Regarding the number of weekly tasting sessions 201 (49%) have fewer than 5 sessions per week, 149 (36%) have between 5 and 10 sessions, and 63 (15%) have more than 10 sessions. It should be noted that 2 responses were excluded because they did not objectively meet the required criteria.

Type(s) of wine(s) tasted

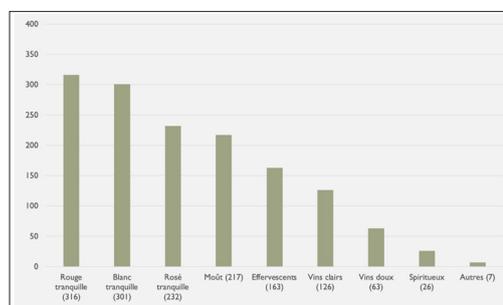


Figure 9: Histogramme des types de vins dégustés

Concerning THE types of wines mostly tasted, a large part of OUR The panel tasted red wines (N = 316), white wines (N = 301), and still rosé wines (N = 232). Similarly, tastings of must (N = 217), sparkling wines (N = 163), and base wines (N = 126) represented a significant portion. Sweet wines (N = 63) and spirits (N = 26) were tasted in smaller quantities. Finally, the category " Others » includes 2 answers about BAVs (Flavored Drinks) has base of Wine), 3 answers comprising THE berries of grapes, 1 analyzing THE wines in fermentation, 1 working in a cider house (Figure 9).

Tasting and Oral Sphere

Regarding tasting habits, we asked oenologists about how they keep wine in their mouths. The majority of them spit out the wine (94.5%).

Concerning the Use of a Accompaniement during their Tasting

- 238 declare born Never to accompany tasting them,
- 36 accompany their tasting of bread,
- 165 accompany their water tasting,
- 6 declare consume A other kind support such that cheese, cold cuts or a dish.

We note that 183 of them, or 44%, have completed the task. a mouth rinse following the tasting session and 30 or 7% to brush their teeth. Finally, we asked them about the presence of tooth sensitivity after tasting. 162 people (39%) reported experiencing it. We then asked them what types of wines would generate these sensitivities. THE answers are presented In THE Table below (Table 2):

Table 2: Table summary of kind of wine generating of the sensitivity’s dental following a tasting session (number and percentage)

Kind of wine	Effective	Percentage of their population
White calm	60	14,5%
Rouge tranquille	29	7%
Rosé tranquille	23	6%
Moût	66	16%
Vin clair	70	17%
Effervescent	31	7%
Spiritueux	1	0,2%
Vin doux	13	3%

We have also received several Remarks putting in link there frequency of tasting and the occurrence of dental pathologies: " Sensitivity is clearly linked to the frequency and intensity of tasting" (present during and after the harvest when there is a lot of tasting and (fades during periods when one consumes less) » "Symptoms worsen during the harvest period (>10 tastings)" by day, work 6 days on 7, coloring of enamel during this period) » "During winemaking: irritation and pain on the tongue + Swelling/inflammation of the papillae.

Eating Habits

We also wanted to assess the food hygiene of our population sample. We present below (Figure 10) the results obtained regarding their habits of consumption of drinks sweet (ex : syrups, juice of fruits), THE drinks acids (e.g. (citrus juices, energy drinks, diet sodas), drinks that are both sweet and acidic (e.g. (e.g., sodas), colored drinks ... (e.g., coffee and tea), acidic foods ... citrus fruits, salad dressings), sugary foods (e.g., sweets, chocolate) and finally alcoholic beverages.

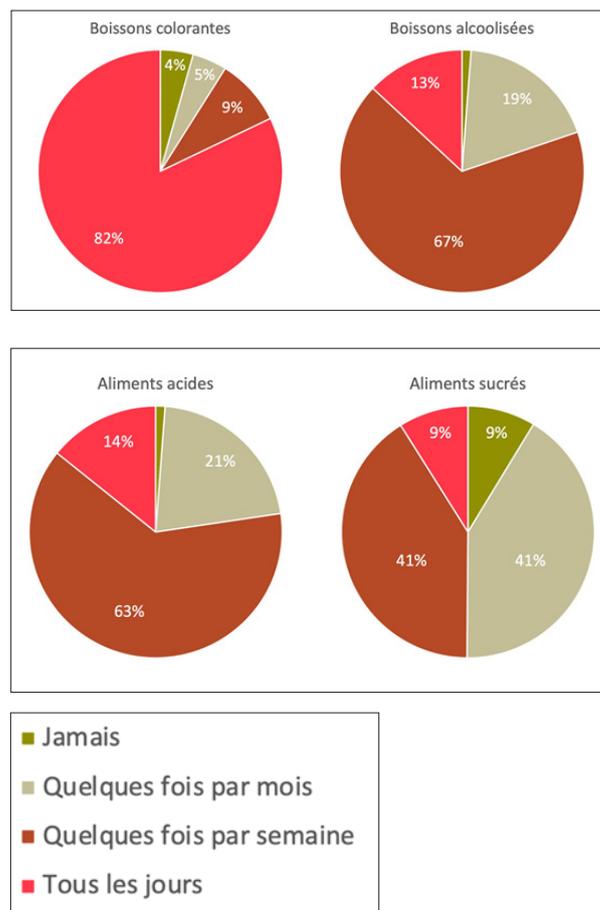
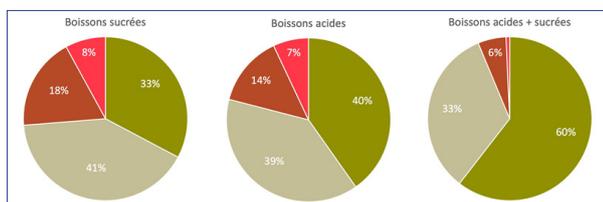


Figure 10: Diagrams in sectors according to THE categories of products consumed

Pathologies Dental Issues Encountered

Concerning THE pathologies dental of which suffer THE oenologists, we have the results are presented in the histogram below (Figure 11). Firstly, it is noted that 225 (54%) oenologists reported having dental stains. 219 (53%) suffer from tooth sensitivity and 168 (40%) erosion dental. On REMARK also that 160 (39%) of them them have of the bleeding gingival, 117 (28%) A shoe loosening dental, 39 (9%) experience dry mouth and finally 104 (25%) admit to having cavities.

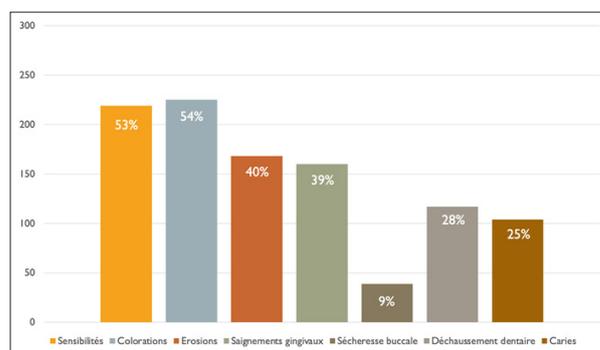


Figure 11: Histogram of the pathologies oral health described by the oenologists

Other pathologies have been identified. Two people suffer from bruxism (teeth grinding). teeth), 1 of a language geographical (inflammation of their face dorsal of their language), 2 cases of aphthous ulcers and 2 cases of oral thrush (Candidiasis). On THE

has also interviewed on THE treatments done in mouth by their Dental surgeon. For minimal loss of dental tissue, restorations with composite resins are used. Or amalgamations are feasible. 181 people (44%) declare to have at less a restoration of This kind. For THE losses tissues more important, 143 (34%) are carriers ceramic restorations such as crowns, veneers, inlays/ onlays/overlays.

Of the winemakers who experienced tooth loss, 77 have what is called compensated edentulism, meaning that the missing tooth has been replaced by an implant, a bridge, or a prosthesis. removable. In OUR sample We Let's count 12 oenologists (3%) equipped, among them 3 on 12 declare to feel A discomfort in the exercise of their occupation. 1 judging one impact on its taste quality and 2 on the coloring of their device. We let's take stock also 32 oenologists with of the edentulism No compensated (at least one missing tooth not replaced).

Hygiene Oral and Dental Frequency Brushing

We then focused our questions on their oral hygiene habits. Regarding brushing frequency (Figure 12), 5 oenologists (1.2%) revealed born not see brush THE teeth all THE days, 83 (20%) a times by day, they are a majority with 277 (66.8%) has se brush THE teeth two times by day, 48 (11.5%) three times by day And finally 2 (0.5%) more than three times a day.

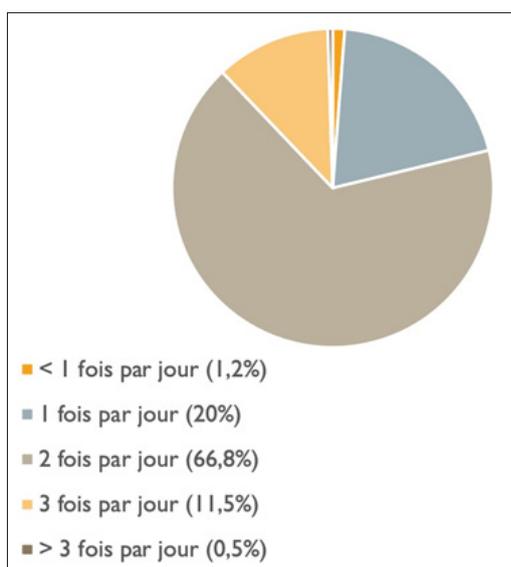


Figure 12: Diagram in sectors of their frequency of brushing of the teeth

Kind of Brush Toothed

Concerning THE kind of brush has teeth (Figure 13), 227 oenologists (59%) We specify that they use a manual toothbrush, 127 (33%) an electric toothbrush and 32 (8%) alternate between manual and electric toothbrushes.

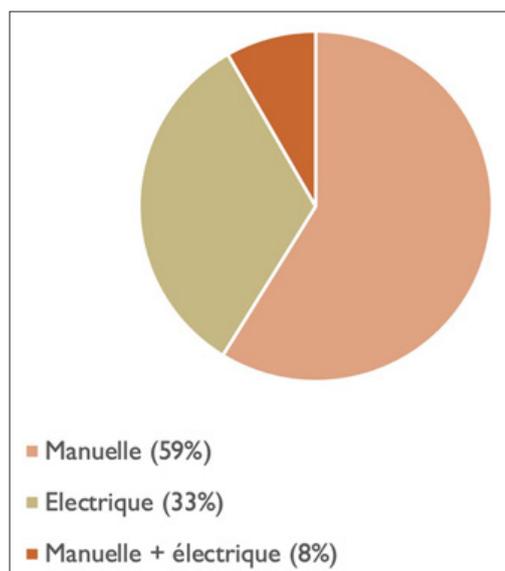


Figure 13: Diagram in sectors of kind of brush has teeth used

Regarding the type of toothbrush bristles (Figure 14), 179 oenologists (53%) say to use of the brushes has teeth has hair flexible. On note a use of hair medium for 142 (42%), and hard for 17 (5%) of them.

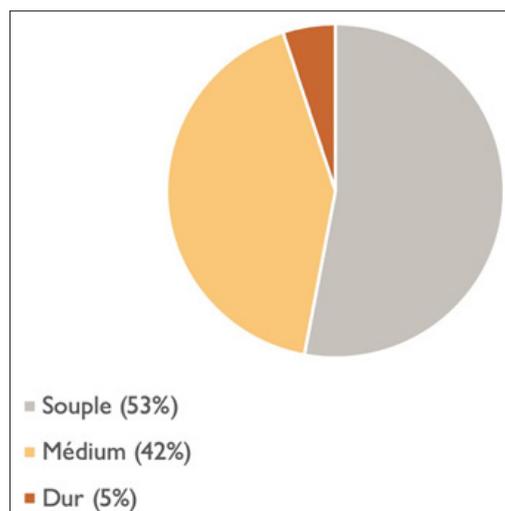


Figure 14: Diagram in sectors of kind of hair of brush has teeth used

Kind of Toothpaste

Finally, regarding the toothpaste used, we inquired about the use of toothpastes with specific properties. It was noted that 245 oenologists (59%) use toothpastes specific against THE sensitivities dental. On REMARK also that 100 (24%) use A toothpaste to properties whitening agents And 32 (8%) of the toothpastes has base of charcoal. 14 of them (3%) use solid toothpastes and 38 (9%) use organic toothpastes.

Consultation at the House of a Professional

He was also important For We of to know THE follow up accomplished at the house of their Surgeon-dentist. Oenologists were therefore surveyed about their frequency of consultation with a practitioner (Figure 15):

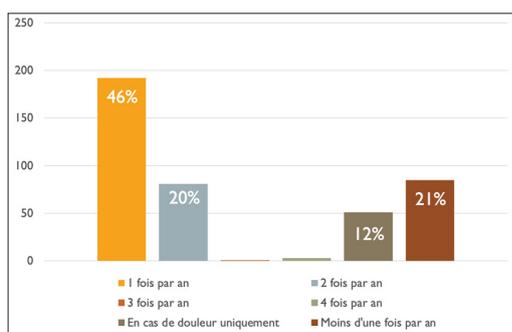


Figure 15: Histogram of frequency of consultation at the house of A dentist

According to the results, 192 (46%) consult once a year, 81 (20%) twice a year, 1 (0.2%) three times by year, 3 (0.8%) four times by year. We note However that they are 85 (21%) has born not to consult all THE years and they are 51 (12%) has born to consult their practitioner than in case of pain. We have Next continued in asking to oenologists if they were receiving of the tailored advice has their occupation by their dental surgeon and only 33% of them them They say so.

Training and prevention

For finish, We THE have interviewed on their curriculum school. We have wanted We assessed the proportion who received prevention advice during their training and found only 39 (9%). It is worth noting that 394 (95%) support the idea that further development of this advice is necessary. We have received several comments We demonstrating This lack information:

"I think it's necessary to be made aware of health information." oral, among other things, during our training and to find practical and easy ways to maintain almost constant oral hygiene.

"I'm still a student, but it's an important point we've already discussed." between students, and this is a bit worrying for us in the profession. So thank you for raising this. "This is an important point in our view."

"It's important to communicate about it before the damage is seen - my new dentist my All of following said that it was related has my occupation, I born I had not considered. »

"There is a very significant lack of information regarding the impact of this profession on the oral health. This should begin with best practices at the faculty level. during the tasting sessions.

Presentation Analytical of the Results

We studied the relationship between the following qualitative variables presence yes/no of sensitivities dental erosion dental of hair colorings, of drought oral, periodontitis or cavities, depending on the type of wine tasted. To confirm the presence or absence of a significant difference, we performed a Fisher's exact test.

THE results obtained are presented In THE paintings following:

Table 3: Painting of their prevalence of the sensitivity's dental according to THE kind of wine tasted

	Effective (%)	p
Red calm	114 (36%)	0.0334 *
White quiet	115 (38.21%)	0.5752
Rosé quiet	84 (36.21%)	0.1893
Must	95 (43.78%)	0.044*
Wine clair	64 (50.79%)	0.0015*
Effervescent	82 (50.31%)	2.00E- 04*
Wine doux	27 (42.86%)	0.5751
Spirits	9 (34.62%)	0.6836
Others wines	3 (42.86%)	1.00

*Corresponds to a p < 0.05 describing as a difference significant

Table 4: Painting of their prevalence of the erosion's dental according to THE kind of wine tasted

	Effective (%)	p
Red calm	121 (38%)	0.127
White calm	119 (39.54%)	0.5756
Pink calm	93 (40%)	0.9198
Must	96 (44%)	0.1099
Wine clear	65 (51.6%)	0.0032*
Effervescent	80 (49.1%)	0.1409
Wine soft	35 (55.6%)	0.0117*
Spirits	10 (38.5%)	1.0000
Others wines	5 (71.4%)	0.1246

Table 5: Painting of their prevalence of the hair coloring according to THE kind of wine tasted

	Effective (%)	p
Rouge tranquille	185 (58,5%)	0,0018*
Blanc tranquille	168 (55,8%)	0,3209
Rosé tranquille	134 (57,8%)	0,1128
Moût	123 (56,6%)	0,3242
Vin clair	60 (47,6%)	0,0865
Effervescent	79 (48,5%)	0,0693
Vin doux	40 (63,5%)	0,1309
Spiritueux	14 (53,8%)	1.0000
Autres vins	5 (71,4%)	0,4609

Table 6: Painting of their prevalence of their drought oral according to THE kind of wine tasted

	Effective (%)	p
Red calm	33 (10%)	0,2382
Blanc tranquille	31 (10%)	0,3513
Rosé tranquille	28 (12%)	0,0418*
Moût	29 (13,4%)	0,004*
Vin clair	11 (9%)	0,8559
Effervescent	13 (8%)	0,49
Vin doux	9 (14%)	0,1599
Spiritueux	3 (11%)	0.7248

Others wines	0 (0%)	1.0000
--------------	--------	--------

Table 7: Table of prevalence of shoe loosening dental declared according to the type of wine tasted

	Effective (%)	p
Red calm	93 (29%)	0,3707
Blanc tranquille	85 (28,2%)	1.0000
Rosé tranquille	67 (29%)	0,7429
Moût	58 (27%)	0,5134
Vin clair	35 (28%)	1.0000
Effervescent	47 (29%)	0,824
Vin doux	18 (29%)	1.0000
Spiritueux	12 (46%)	0.0433*
Others wines	2 (29%)	1.0000

Table 8: Table of their prevalence of the lesions caries declared according to THE type of wine tasted

	Effective (%)	p
Red calm	76 (24%)	0,4259
Blanc tranquille	74 (25%)	0,7055
Rosé tranquille	63 (27%)	0,3049
Moût	57 (26%)	0,5724
Vin clair	30 (24%)	0,8055
Effervescent	38 (23%)	0,5625
Vin doux	17 (27%)	0,7525
Spiritueux	8 (30%)	0,4874
Autres vins	3 (43%)	0,3741

In We referent At Painting III, on REMARK that the y has A link between THE tooth sensitivity and there tasting of wines clear, of musts, of wines effervescent and of wines quiet reds. Regarding erosions, there is a correlation with the tasting of light wines and sweet wines (Table 4). On REMARK also that a relationship establishes between the appearance of dental staining and tasting still red wines (Table 5).

At subject of their drought oral (Table 6), We we observe A link with tasting of still rosé wines and musts. For This Who East of shoe loosening dental declared (Table 7), he East found only in spirits tasting. Namely, no link can be established between the presence of cavities and the tasting of any wines combined (Table 8).

Discussion

Through this study, we wanted to define the tasting rituals of oenologists. He turns out that a major part spits out THE wine (94.5%) And only 44% of them them realize a rinsing oral following has their session of tasting. In This Who concerned their frequency of the This consumption varies throughout the year. Periods of intense activity, such as winemaking or harvesting, increase average consumption to up to 250 samples per day, but this figure decreases outside of these periods. It was therefore difficult for oenologists to accurately quantify their frequency.

Regarding their dietary habits outside of work, we generally concluded that they have good dietary hygiene. Indeed, they rarely consume sugary and/or acidic drinks, which helps limit the development of erosive lesions. And hypersensitivities dental. These good habits limit also the impact on their quality analysis In THE frame of their exercise. They are However many (82%) has Drinking coloring beverages like coffee or tea daily obviously has an impact on the appearance of the hair coloring dental. They are also many has consumed frequently consume alcoholic beverages outside of their profession, 279 (67%) report drinking them several times a week.

Regarding oral hygiene habits, a majority (66.8%) perform A brushing of the teeth twice a day. On recall that THE recommendations are of Brush twice a day for two minutes each time. As for the type of toothbrush, manual or electric, it has no impact on the incidence of dental problems. The important thing is to use a proper brushing technique for each arch. Regarding the type of toothbrush bristles, the use of medium to hard bristles unfortunately has its place. Again, too much important on THE walk. We soap that THE hair too much hard generates Gum problems such as recession or bleeding gums. They also tend to damage enamel And SO has to favor Hypersensitivity. He East strongly recommended to use A soft-bristled toothbrush. These will allow for deep cleaning and gentle removal of plaque.

Finally, regarding toothpaste use, 59% use a specific toothpaste for teeth sensitive, this number therefore We oriented on the idea that THE oenologists They seek to prevent sensitivities caused by their profession. Regarding whitening or charcoal-based toothpastes, many oenologists use these types of products (32%). Gold these products cosmetics to properties purifying and detoxifying, promising While they may give a brilliant whiteness, they are actually very abrasive to enamel and can cause hypersensitivity. Thus, that of the wear and tear premature and irreversible of enamel. A putting in guard is also necessary For THE 14 oenologists (3%) using of the toothpaste's solids and the 38 (9%) using of the toothpastes Organic, because these products contain for their large Most contain little or no fluoride in their composition. However, fluoride is essential for protecting enamel and fighting cavities, so it is important to check their ingredients when buying them.

We airplanes also for objective devalue their socket in charge of this population in the office. Although the majority of oenologists consult at least once a year, the results demonstrate that the y has Again of the improvements has bring in their socket in charge. They are Too many patients (12%) still only consult their dentist in emergencies. These patients are considered a high-risk group, making an annual check-up with their dentist advisable. It's also worth noting that only 33% of oenologists receive information tailored to their profession. Therefore, for proper care from dentists, it's essential to ask patients about their profession, as this can have an impact on their overall health. oral. He East also important of se form on THE pathologies met for to better guide and treat these patients.

Finally, our main objective was to identify potential risk factors for occupation on the incidence of the pathology's oral health. OUR analysis has permit of put in evidence A link between the appearance of sensitivities dental at the house of THE oenologists

tasting Musts, still wines, sparkling wines, and still red wines. The same applies to dental erosion in oenologists tasting still and sweet wines. The colorations would be generated by their tasting of wines red, as to has their drought oral, she would be associated with the tasting of rosé wines and musts. Finally, we were able to conclude that the occurrence of periodontal disease and carious lesions was not correlated with the profession of oenologist.

This investigation We has SO permit of update THE data previously the data collected nevertheless contains some biases. In particular, there is a selection bias; it can be assumed that the people who responded to the online questionnaire are oenologists who feel more concerned. by THE pathologies oral health. Of more, on note A bias information, because the answers are subjective, based solely on the feelings and knowledge of the wine experts. No clinical examination was performed by a dentist to confirm the presence of dental pathology. Furthermore, certain conditions such as erosion, cavities, and periodontal disease are difficult to self-diagnose. Finally, A bias of confusion can stand out, because GOOD that We let interviewed THE oenologists on their lifestyle; we can hypothesize that the appearance of an oral pathology linked to the profession may also be associated with other factors, including genetic, environmental and behavioral ones.

Prevention And Treatments

As described in Part 2 and confirmed in our study, oenologists are considered a high-risk population, particularly with regard to erosion, sensitivity, and tooth discoloration. Several therapeutic options are available to us to prevent, or at least limit, this impact.

Prevention And Good Practices

Actions of prevention carried at the house of students in order to devalue their prevention done with of the students in oenology, 3 schools have Several institutions were contacted in the Reims area (Avize Viti Campus, the DNO program at the University of Reims Champagne-Ardenne, and the BTS and vocational baccalaureate programs in oenology at the MFR in Gionges). None of them include an oral health prevention component in their curriculum. teaching. He would be SO necessary to include a unit of prevention oral and dental at the house of THE students in order to of THE to raise awareness of the THE beginnings of their occupation to good practices in oral health.

Follow up at the House of THE Dentist

Secondly, it's important to note the significance of regular checkups with the dentist. He alone will be able to diagnose a lesion dental or tissue. For THE patients topics to In the case of acid attacks, it is recommended to have a visit to your doctor every 6 months in order to diagnose any lesion early and treat it before it worsens [26].

Hygiene Oral and Dental

Regarding the daily habits that winemakers should adopt, it is recommended to brush twice a day, for a duration of two minutes each time. The technique should be atraumatic, using a toothbrush with soft nylon bristles (15/100ths of a millimeter). - 20/100ths of a mm in diameter) and a pH-neutral, low-abrasive, fluoride toothpaste and dosed at 1450 ppm Minimum amount of fluoride to strengthen enamel [27].

Food Hygiene

As we saw earlier, dietary habits play a major role in the incidence of cavities and dental erosion. It is therefore recommended to limit the consumption of acidic or sugary foods and drinks, particularly fruit juices, sodas, citrus fruits, salad dressings, sports drinks, etc. THE snacking between THE meal East also Not recommended in order to to avoid A pH oral acidity over the long term and prolonged demineralization.

Advice At Course of the Tasting

During a tasting session, oenologists should ideally be provided with a glass of water for rinsing their mouths at the end of the tasting. Use of baths of mouth in END of session East has realize with precaution. In effect Long-term use of these products can disrupt the oral flora and also cause discoloration of the mucous membranes, so it is preferable to use only water.

It is also advisable to consume foods rich in calcium, phosphate and casein, such as milk, yogurt or cheese, to allow for enamel remineralization.

Roles of Dentist Preventive

The primary role of the dentist is to raise awareness among these at-risk patients. It is essential to provide the patient with clear, tailored, and personalized information. A thorough consultation with the patient is important to understand their medical history and identify medical risk factors and harmful habits.

Curative Demineralization

As part of the management of dental tissue loss, the application of good habits in matter hygiene oral health East essential. For THE lesions for more extensive erosive lesions, the appropriate treatment will depend on the type and severity of the lesion. Must be privileged in 1st intention of the treatments No invasive, thrifty in dental tissues, preservatives and additives.

For landing to areas of demineralization and to lesions erosive of weak And for moderate to extensive conditions (Bewe index between 9 and 13), the use of ambulatory or chairside remineralizing agents is recommended.

Agents Remineralizing Agents Outpatient Bioactive Lenses

Some technologies as THE glasses bioactive allow a regeneration of hydroxyapatite. They notably contain a base of NOVAMIN (calcium and sodium phosphosilicate), found for example in Sensodyne Repair & Protect® toothpastes. These silicates integrate into exposed collagen, and then release sodium, phosphate, and calcium in contact with their saliva, allowing Thus to raise THE pH. HAS pH pupil, THE calcium will partner at phosphate for form of phosphate of calcium Who go crystallize for form of hydroxyapatite identical to that formed in mineralized tissues.

These glasses bioactive have several properties, in more of allow their remineralization of exposed dentin, they reduce dentin hypersensitivity but also have antibacterial properties.

Fluorides Combined at the CPP- ACP

Other outpatient treatments exist based on fluorides combined with CPP-ACP (casein phosphopeptide and amorphous calcium phosphate). These treatments regulate the availability of the ion's calcium, phosphates and fluorides. During of a drop of pH, THE ions released generate a saturation in minerals And allow Thus of reduce their demineralization and induce remineralization.

Example: GC Tooth Mousse ® East A Freeze Who is used has residence. There duration of the treatment lasts 1 to 3 months. Application is done after brushing, using an interdental brush. access to areas demineralized. THE patient must Next to leave act THE freeze for 30 minutes.

Varnish Remineralizing Agents Applied to the Armchair

There are other agents such as varnishes applied chairside by the dentist 2 to 4 times a year. Based on sodium, tin, or calcium fluorides, they allow the training of a layer superficial of single crystals of fluoride of calcium.

During pH drops, these crystals will dissociate and release fluoride and calcium ions, thus stimulating enamel remineralization [28].

Examples: Duraphat ® from Colgate ® is a varnish based on sodium fluorides at 22,600 ppm (2.26%) in a resin base. Bifluorid 10 (6%) East A varnish of at the house of Voco ® comprising 5% Sodium fluoride and 5% calcium fluoride. It is also indicated in the treatment of hypersensitivities.

For more extensive losses of substances, where remineralization is no longer possible (Bewe index ≥ 14) Conservative treatment with the placement of composite or glass ionomer cements (GIC) is indicated. When these resins are no longer sufficient, ceramic restorations such as onlays, overlays, and crowns can be performed. These restorations, while less conservative in terms of tooth structure, nevertheless allow for the restoration of vertical dimension, the restoration of masticatory function, and the recovery of lost aesthetics. (26) (Table IX)

Table 9: Painting summary of the treatments indicated and frequency of control according to the Bewe index (10)

Risk level	Score SHOCK	Conseils HBD	Fluoride and prevention	Conservative restoration	Control
None	< 2	✓			3 years
Low	3 - 8	✓			2 years
Medium	9 - 13	✓	✓		6 - 12 month
High	< 14	✓	✓	✓	6 - 12 month

Hypersensitivities

As previously defined, the application of oral hygiene and dietary advice is recommended to prevent dentin hypersensitivities.

However, for to treat THE sensitivities persistent, two strategies Several options are possible (Table X): The first method relies on obliterating the dentinal tubules using chemical agents that reduce acid dissolution of dental tissues and promote remineralization. Examples include stannous and sodium fluorides, amine fluorides, strontium chloride, and potassium oxalate.

There second option rest on their desensitization of the fibers nervous has help of salts potassium (chloride of potassium or nitrate of potassium). These agents as to has them are going block the transmission of nerve impulses to the pulp fibers.

As a first step, the practitioner may prescribe toothpastes or dental gels to their patient. sensitive has use ambulatory. In case of persistence of the symptoms, the application Topical application to the chair is indicated.

Table 10: Table summary of the treatments outpatient And topicals against dental hypersensitivity: [10]

Galenic	Mechanism of action	Nature of molecules	DCI
Desensitizing toothpastes or solutions	Obliteration of the tubules dentin	Stannous fluoride, amine fluoride, arginine, Novamin®	Elmex sensitive®, Sensodyne repair & protect ®
	Neutralization nerve fibers	Potassium nitrate Potassium chloride	Fluocaril Sensitive Teeth ®
	Obstruction of the tubular inlets	Tin fluoride	Tooth Mousse ®
Gels or foams		CPP-ACP CPP-AFCP	
Fluoride varnishes applied to the armchair	Protective film remineralizing	Rosin with variable concentrations of fluorides	Profluorid ® Varnish
Agents adhésifs désensibilisants appliqués au fauteuil	Tubular sealing	Polymers with added calcium and oxalates	BisBlockTM

	Tubular sealing and protein precipitation	HEMA and glutaraldehyde	Pulpdent®, HEMA Glutabenz
--	---	-------------------------	---------------------------

As a last resort, the dentist will opt for invasive treatments, performing conservative restorations (using composite resins or CVI), surgeries of recovery root-forming in case of recession gingival. Or Again of the Endodontic treatments are used as a last resort in the most severe cases.

Hair Coloring

Descaling and Air Polishing

To combat wine-induced staining, dentists can perform scaling and polishing combined with air polishing, which is effective against superficial tooth discoloration. However, these treatments have their limitations; patients must be informed of the risk of recurrence and the need for frequent treatment repetition.

Laundering Dental has the House

He East important of remind that the use of toothpastes to properties Bleaching agents, which are too abrasive for enamel fabric, are strongly discouraged. In cases of more severe and multiple discolorations, the dentist may perform an external bleaching treatment using carbamide peroxide. The treatment is primarily performed at home; the dentist creates custom-made thermoformed trays which are then given to the patient. The patient applies the bleaching solution to the trays and wears them every night for approximately [duration missing]. 3 weeks. However, THE patient must respect some recommendations. This includes the prohibition of certain pigmented foods. This leads us to question the challenges faced by oenologists when trying to stop drinking wine. Furthermore, this treatment frequently causes dentin hypersensitivity, although reversible. Since oenologists are a population prone to dental sensitivities, this type of treatment may be unsuitable.

Micro-Abrasion

Other enamel micro-abrasion treatments achieve chemo-mechanical abrasion. This technique combines acidic agents with erosive properties, such as orthophosphoric acid. 30% Or acid hydrochloric 6-18% associates have of the microparticles (aluminum oxide, silicon oxide, or silicon carbide). This technique removes the superficial layer of enamel, thus potentially correcting tooth discoloration. However, we can once again question the suitability of this type of treatment for winemakers suffering from dental erosion and hypersensitivity.

Oncology ENT

Cancers have a multifactorial origin. In the workplace, regular exposure to certain risk factors has been identified, but other factors, particularly individual and environmental ones, also influence the occurrence of cancer.

According to Public Health France and the National Cancer Institute, the lower-risk consumption limits the maximum recommended intake is 2 glasses per day and 10 glasses per week. Below these limits, there is little to no risk of medical repercussions.

However, the working conditions of oenologists clash with these recommendations. Recognition of this condition as an occupational cancer by the Regional Center for Occupational

and Environmental Pathologies (CRPPE) would imply improve monitoring. of this population. A follow up ENT close would of screen Early detection of precancerous lesions. Since the incidence of ENT cancers is also linked to oral health, dental rehabilitation and education in good hygiene habits are recommended.

Conclusion

In conclusion, we have demonstrated a link between the profession of oenologist and the development of certain oral pathologies, including hypersensitivity, erosion, and tooth discoloration. It would be interesting, however, to determine whether this profession represents a risk factor for head and neck cancers, but to date, no studies have been conducted on this specific population.

Preventive solutions, including adopting good daily tasting and hygiene habits, can limit the occurrence of these pathologies. Furthermore, therapeutic solutions exist, so it is necessary to reiterate the importance of regular follow-up with a dental surgeon to prevent and/or treat these pathologies.

Our investigation also led us to conclude that there was a lack of preventative information. with of the oenologists. THE results of OUR study demonstrate However that These are the ones who are asking for it. Our collaboration with the National Union of Oenologists for the completion of this work will undoubtedly allow for future developments.

References

- Larousse. Œnologie [Internet]. Paris: Larousse. 2023. <https://www.larousse.fr/dictionnaires/francais/%C5%93nologie/55670>
- Gadéa C, Olivesi S. The professions of the vine and wine: from terroirs to professional territories. Fontaine (FR): Presses Universitaires de Grenoble; 2019. 335.
- Delanoë D, Maillard C, Maisondieu D. Wine: From Analysis to Production. 6th ed. Paris: Tec & Doc; 2012. 202.
- Champagne Committee. The Making of Champagne. 2024. <https://www.champagne.fr/fr/decouvrir-le-champagne/elaboration-du-champagne>.
- Vignobles.net. Guide des principaux cépages de France. 2023. <https://vignobles.net/guide-des-cepages/>
- Schuster M. The pleasure of wine: getting to know it better, tasting it better, appreciating it better. Paris: France Loisirs. 1991. 139.
- Rosa S. Guide Hachette des vins 2017. 33rd ed. Vanves (FR): Hachette Pratique; 2016. 1344 p.
- Briand L, Issanchou S, Monnery-Patris S, Pénicaud L, Schaal B, et al. The meaning that gives flavor to life. Sci Avenir. 2013. 174: 26-30.
- Pellerin C, Pellat B, Weill RP. Biochimie odontostomatologique. Paris: Masson; 1986. 263.
- Devillard R, Romieu O, Arbab-Chirani R, Colon P, Mortier E, et al. Restorative dentistry and endodontics. Paris: ID Presse; 2021. 292.
- George R, Chell A, Chen B, Undery R, Ahmed H. Dental erosion and dentinal sensitivity amongst professional wine

- tasters in South East Queensland, Australia. *Sci World J.* 2014. 2014: 516975.
12. Wiktorsson AM, Zimmerman M, Angmar-Månsson B. Erosive tooth wear: prevalence and severity in Swedish winetasters. *Eur J Oral Sci.* 1997. 105: 544-50.
 13. Willershäusen B, Callaway A, Azrak B, Kloß C, Schulz-Dobrick B. Prolonged in vitro exposure to white wines enhances erosive damage on human permanent teeth compared with red wines. *Nutr Res.* 2009. 29: 558-567.
 14. INRS. Professions and sectors of activity.2023. <https://www.inrs.fr/metiers.html>
 15. Cunha-Cruz J, Wataha JC, Heaton LJ, Rothen M, Sobieraj M, Scott J, et al. The prevalence of dentin hypersensitivity in general dental practices in the Northwest United States. *J Am Dent Assoc.* 2013. 144: 288-296.
 16. Meyle J, Chapple I. Molecular aspects of the pathogenesis of periodontitis. *Periodontol 2000.* 2015. 69: 7-17.
 17. Papapanou PN, Sanz M, Buduneli N, Dietrich T, Feres M, Fine DH, et al. Periodontitis: Consensus report of workgroup 2 of the 2017 World Workshop. *J Periodontol.* 2018. 89: S173-82.
 18. Tezal M, Grossi SG, Ho AW, Genco RJ. The effect of alcohol consumption on periodontal disease. *J Periodontol.* 2001. 72: 183-189.
 19. Amaral CSF, Vettore MV, Leão A. The relationship of alcohol dependence and alcohol consumption with periodontitis: a systematic review. *J Dent.* 2009. 37: 643-651.
 20. Kongstad J, Hvidtfeldt UA, Grønbaek M, Jontell M, Stoltze K, Holmstrup P. Amount and type of alcohol and periodontitis in the Copenhagen City Heart Study. *J Clin Periodontol.* 2008. 35: 1032-1039.
 21. Marandas P. Cancers of the upper aerodigestive tract: current data. Issy-les-Moulineaux (FR): Masson; 2004. 226.
 22. Canadian Centre on Substance Use and Addiction. Canadian alcohol benchmarks and health: final report 2023. <https://www.ccsa.ca/en/canadian-benchmarks-on-alcohol-and-health-final-report>
 23. Fricain JC, Boisramé-Gastrin S, Chaux-Bodard AG, Cousty S, Devoize L, Lesclous P, et al. *Chirurgie orale.* Paris: ID Presse. 2019. 523.
 24. Pesci-Bardon C, Prêcheur I. Addictive behaviours: tobacco, alcohol, drugs and other illicit substances—impacts on oral health. *EMC Odontol.* 2010. 23: 760-780.
 25. Préaubert E. Clinical effects of champagne tastings on the oral cavity of oenologists [doctoral thesis]. Reims (FR): University of Reims Champagne-Ardenne; 2012.
 26. Lussi A, Jaeggi T, Liger F, Perelmuter S. Dental erosion: diagnosis, risk assessment, prevention, treatment. Chicago: Quintessence International; 2012. 132.
 27. UFSBD. Information sheet: fluoride toothpaste. 2023. https://www.ufsbd.fr/wp-content/uploads/2021/11/fiche-dentifrice_fluore_021121.pdf
 28. UFSBD. Indications for fluoride varnishes. 2023. <http://www.ufsbd.fr/wp-content/uploads/2019/09/Fiche-indications-verniss-fluoré-1.pdf>.