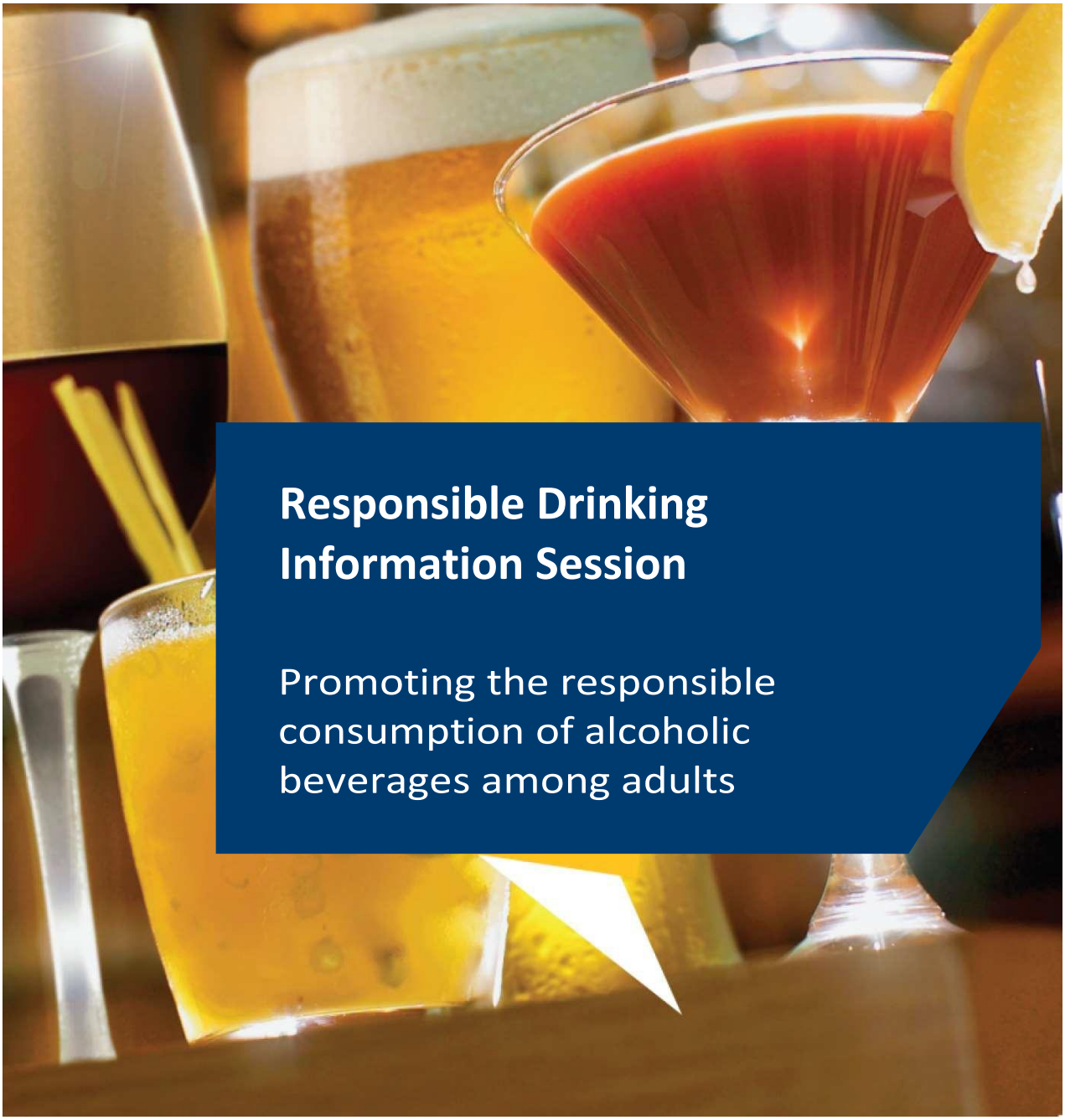
MANUAL FOR STUDENTS



Responsible Drinking Information Session

Promoting the responsible consumption of alcoholic beverages among adults

Contents

FOREWORD

In Romania, alcohol often accompanies celebrations, friendships, and cherished traditions. Whether at family gatherings, social events, or festive occasions, it holds a role that brings people together. But with this tradition comes a shared responsibility—to enjoy responsibly, in ways that protect our health and safety.

The distilled beverages sector in Romania is dedicated to providing high-quality products, strictly adhering to all regulations to ensure they are enjoyed safely. These beverages are meant to enhance social experiences, not to encourage misuse or harm. Over time, we've taken various steps to promote safe and informed choices regarding alcohol, particularly among young adults and students like yourselves.

This handbook is a new addition to our ongoing efforts, offering university students the knowledge and guidance needed to make balanced, responsible decisions when it comes to drinking. By sharing accurate information and dispelling common myths, we aim to empower each of you to make choices that are right for you. When producers and consumers work hand in hand, we build a culture that values well-being and moderation.

As students, by promoting the information in this handbook, you're playing a crucial role in spreading awareness and reducing alcohol-related harm. Your voice can make a difference in fostering a safer, more responsible approach to alcohol for yourselves and those around you.

Always enjoy responsibly!

The Spirits Romania Association team

WHAT IS ALCOHOL?

History and etymology

Throughout history, alcohol has woven itself into the fabric of social engagements, spanning realms from religious and secular rituals to dietary practices and even medicinal applications. The consumption of alcohol by diverse cultures traces back to times preceding recorded accounts. Initially embraced for its therapeutic potential, it has since relinquished that role due to its potential for inducing intoxication.

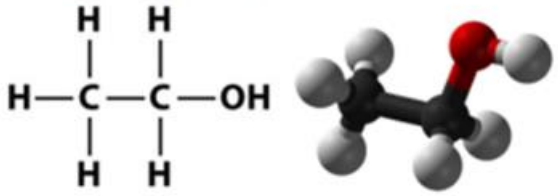
The etymology of "alcohol" traces back to Arabic origins. Initially referring to substances like galena and certain dark powders that transformed into vapor when liquefied. This term was later adopted to describe the distilled powder known as "Al Kohl" and was used by women around their eyes. When wine began to be distilled, the Arabic name for the distilled powder was used, due to its resemblance to the distillation process used in creating wine-based spirits.

Type of alcohol found in beverages

Alcohols are a family of similar organic compounds assembled from a combination of carbon (C), oxygen (O), and hydrogen (H) atoms and containing an -OH group. Where 2 carbons are present, the alcohol is called ethanol (or ethyl alcohol). This variant of alcohol is found within all alcoholic beverages, including beer, wine, and spirits. Ethanol can be written as C2H6O, CH2-H5-OH or CH3-CH2-OH.

In this manual, alcohol is a synonym for alcoholic beverage(s). "Alcohol" or "alcoholic beverage" refers to a product that contains ethanol (ethyl alcohol) and is primarily intended for human consumption (mainly through drinking).

Two common ways to represent the structure of ethanol



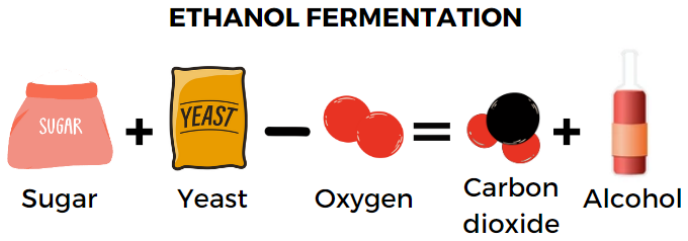
HOW ALCOHOL IS MADE

All alcoholic beverages use agricultural raw materials (grains, vegetables, or fruits) as their foundational source. Depending on their production method, some alcoholic drinks are only fermented, and some undergo a further step, distillation.

Fermentation

Ethanol fermentation is the basis for all alcoholic beverages. It is a biochemical process that converts sugars into cellular energy, producing ethanol and carbon dioxide as by-products. Yeasts perform this this conversion in the absence of oxygen, so is considered an anaerobic process.

Spontaneous fermentation can occur when organic materials or liquids with enough sugar content are allowed to mature over an extended duration at optimal temperatures. In this context, native yeasts that are naturally present in the air and on fruit skins lead to spontaneous fermentation creating a fermented drink.



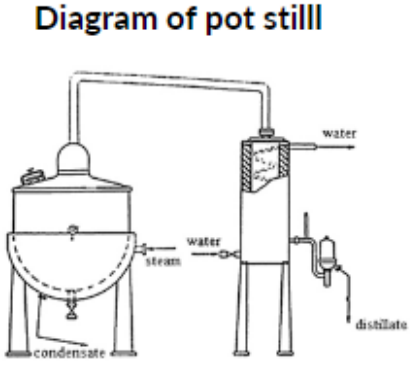
Distillation

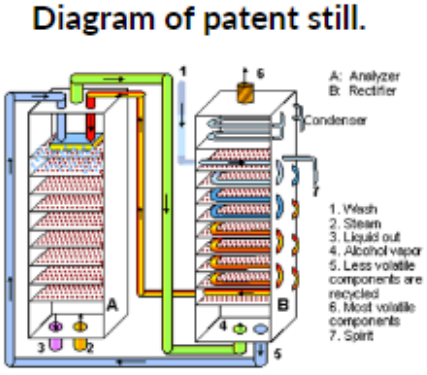
Distillation is a process that exploits differences in the volatility of the components of a mixture to separate them. Different components of a mixture have different boiling points, and it is these differences which enable the process of distillation to perform the separation. The liquid is heated to convert it into gas or vapor and then condensed back into liquid form.

When spirits are distilled the original liquid (called wash) has already been fermented. Distillation works because ethanol boils at 78.5^{o}C and water at 100^{o} C. When liquid is heated to 78.5^{o}C the alcohol boils off leaving other constituents, mostly water behind.

Equipment used

The equipment used to distil spirits is called a still. A still has three essential parts: the still (or retort) which heats the liquid, the condenser in which the vapor is cooled, and the receiver which collects the distillate at the end of the process.





The two most used stills are continuous stills and pot stills.

- **Pot still or alembic:** This still heats the wash in the boiler. Alcohol evaporates and travels up a refrigerated coil. On cooling, this vapor turns back into a liquid, but with a higher concentration of alcohol and far fewer impurities.
- **Patent still or continuous still:** This still has two columns, the analyser and the rectifier each of which are divided with several plates. The analyser vaporises the alcohol from the hot wash. The rising alcohol vapours proceed to the rectifier column where they are cooled down meeting the cold wash. In contact with the cold wash the less volatile parts of the vapours descend and in contact with hot steam the most volatile substances rise. Thus, gradually, the vapours at the upper part of the column become purer and the impurities at kept at the base of the column.

Resulting distillate

The resulting distillate is known as agricultural ethyl alcohol and is the raw material common to all spirit drinks. For a more refined alcohol, several distillations can be carried out. The distillate may be filtered, aged, or flavoured (or a combination of any or all three). It is also diluted with water to the bottling strength on the label. The exact process depends on the type of spirit being made.

Clarification and Filtration

Sometimes, to enhance the purity of the distillate, a clarification process is used to eliminate suspended substances. This technique involves the introduction of a binding agent, like egg whites, into the liquid. This binding makes separation from the liquid easier. Additionally, filtration via organic carbon turbines or other compatible materials like quartz sands is also used.

Aging and Blending

Spirits can be aged, which not only enhances their flavour and sensory characteristics but also leaves an indelible impression on the wooden barrels, usually oak, which house them during this aging process. Aging can assume two forms: static, involving the spirit's undisturbed residence in a singular barrel over time, or dynamic, entailing the periodic transfer from one barrel to another guided by the distiller's discernment.

Further, blending of products from different origins or years is common. Here, a portion of the content from each barrel is periodically drawn off and incorporated into others, contributing to the unique character and complexity of the final product.

European Union Regulation 110/2018

Both the manufacturing processes and the raw materials used are regulated by the European Union in Regulation 110/2008 regarding the definition, designation, presentation, labelling and protection of the geographical indication of spirituous beverages. This regulation results from recognising the importance of spirits in the European Union and the need to establish an essential tool for the classification, protection, and development of these products.

All alcoholic beverages undergo fermentation but not all fermented beverages are distilled.

TYPES OF ALCOHOLIC BEVERAGES

Based on their production method, alcoholic beverages can be categorised into two major groups:
✓Fermented products.
✓Spirits or distilled products.

Fermented products

Fermented products include beer, cider and wine.

Beer

Beer is made by fermenting water, hops, yeast and barley malt. Water has a large impact on its flavour and different types of beer can be brewed depending on the hardness of the water. Hops are used mainly as a flavouring and stability agent, to which they impart bitter, zesty or citric flavours. Two types of yeast can be used, known as ale and lager yeasts in the brewing industry. Malted barley is the source of the sugars which are fermented into beer by the yeast.

Except for non-alcoholic beer, the alcohol content in beer should be at least 3% by mass and the primitive dry extract (PDE)should be at least 11% by mass.

Types of beer
Beer can be classified using various factors – colour, flavour, strength, ingredients, production method, recipe, history, or origin. Most beer styles fall into types roughly according to the time and temperature of the primary fermentation and the variety of yeast used during fermentation.

- **Top fermented beers (ales):** Fermentation occurs at temperatures of 15–23°C. This type of beer is known as a top fermented beer as the yeast used floats on top of the beer during the fermentation. Examples of top fermented beers include brown ale, pale ale, stout and wheat beer.
- **Bottom fermented beers (lagers):** Lagers are the most consumed beers worldwide taking their name from the German lagern (meaning 'to store'). Fermentation occurs at temperatures of 7–12°C, with the beer then being stored at 0–4°C (the 'lagering phase'). During this time the lager clears and mellows. This type of beer is known as bottom fermenting as yeast sinks to the bottom during the fermentation process. They are commonly classified on their place of origin, such Pilsner style which was pioneered in the town of Pilsen (Plzeň), in an area of the Austrian monarchy now located in the Czech Republic. Other classifications include the peculiarities of its elaboration: smoked, Bock, Steam, Rauchbier, rye, black and seasonal.
- **Spontaneously fermented beers:** Are beers fermented using wild yeast strains. Types include Lambie, Gueuze and Faro beers.

Cider

Cider is fermented apple juice, to which up to 10% of pears can be added. It can be drank as is or used to make vinegar. Most ciders contain between 5 and 7% vol., although some regions make unfermented apple juice (no alcohol) and whose nutritional value is very high. Alcoholic cider can be sweet or dry and some are carbonated.

Wine

Wine is produced by the complete or partial fermentation of the natural sugars present in grapes or grape must (pulp).

There is a wide variety of wines, but three types are explained below.

Red wines

Red wine is made from the must of red or black grapes and fermentation occurs together with the grape skins, which give the wine its colour. Once the fermentation is complete (around 20 days), the process of racking or bleeding (separation of the newly fermented wine from the grape solids) is carried out.

Red wine can be aged, and depending on the time it spends in barrel, cask, and bottle, it is commonly categorized into:

- Young or Harvest: wine from the year's production and ready to be bottled as soon as its fermentation is completed. Can be aged between zero and six months.
- Crianza: Aged for two years, at least six months of which in an oak barrel.
- Reserva: Aged for three years, at least one of which in an oak barrel.
- Gran Reserva: Aged for five years, at least two of which in an oak barrel.

White wines

White wine is made by fermenting the must of white or red grapes. The must is filtered to remove the skins, seeds etc., immediately so that they do not colour the liquid. Although it is not common to age white wine, they are sometimes aged.

Rosé wines

Rosé wine is made from red grapes where the juice is allowed to stay in contact with the dark skins long enough to pick up a pinkish colour (maceration or saignée). Once filtered, the must is fermented.

Distilled products

Distilled products are all alcoholic beverages in which the concentration of ethanol has been increased above that of the original fermented mixture by a method called distillation. The resultant distillate is matured, often for several years, before it is packaged and sold. The distillate must be at least 15% alcoholic volume.

The most common spirits are those derived from grains (whiskey, vodkas), grapes (cognac, brandy), molasses (rum). Each category has specific production requirements, such as the raw material, the number of distillations or the aging time. The following are examples of spirit drinks.

[Note: The below are popular spirits. You can tailor these examples by adding any popular/made in your country spirit descriptions of your own].

Brandy

Brandy derives its name from the Dutch word brandewijn ("burned wine"). Brandy is made by distilling wine and then aging it in oak barrels. The distilled product must be matured for at least one year in oak barrels, or 6 months if the barrels are smaller than 1,000 litres. No other alcohols or flavourings are added, except those used in traditional production methods. It must have a minimum alcoholic strength of 36% vol.

Gin

Gin is a juniper-flavoured spirit drink that is produced by flavouring alcohol of agricultural origin with juniper berries through maceration. Other flavouring substances and flavouring preparations may also be used so long as the spirit tastes predominantly of juniper. Gin must have a minimum alcoholic strength of 37.5% vol.

When juniper berries are distilled instead of macerated the resulting product is referred to as "distilled gin". After distillation, other alcohols and flavourings may be added to this product. Also, other categories of drinks use "gin" in their name but that differ each other and from gin due to their production process and are not the type of gin referred to here.

Rum

Rum is a made by fermenting and then distilling sugarcane molasses, syrup or juice. The distillate is often aged in oak barrels. The type of yeast used in the fermentation process influences the type of rum produced. Quick acting yeast produces light rum which is commonly used in cocktails and slow acting yeast enhances the body and flavour of the resulting rum. No addition of flavouring agents may be used and only natural caramel may be added to adjust its colour. Depending on the aging period, rum is labelled "blanco" (white) when it lacks colour due to not undergoing aging; "añejo" (aged) for rum aged over a year; and "Viejo" (old) denoting rum aged for more than three years. Rum must have a minimum alcoholic strength of 37.5% vol.

Vodka

Vodka is produced from alcohol of agricultural origin which can be made from any agricultural raw material, although when it is made from agricultural raw materials other than cereals or potatoes, these must be stipulated on the label. The name vodka is a diminutive form of the Slavic word "voda" (water) and is characterised by its colourless appearance. The vodka production process eliminates impurities through distillation, refinement, and filtration to result in a drink in which the characteristics of the agricultural materials used are selected. Vodka must have a minimum alcoholic strength of 37.5% vol.

Whisky

Whisky is made from fermented grain mash. Various grains (which may be malted) can be used, including barley, maize and wheat. Different types of whisky can be produced such as "malt whisky" (made with malted barley), "grain whisky" (from any type of grain) or "blended whisky" (a mixture of malt and grain whisky and can be from different distilleries). Whisky must be aged for at least three years and is typically aged in wooden casks, which are usually made of charred oak. The word whisky is an anglicisation of the Classical Gaelic word uisce (water). Only water or natural caramel to adjust the colour may be added. Whisky must have a minimum alcoholic strength of 40% vol.

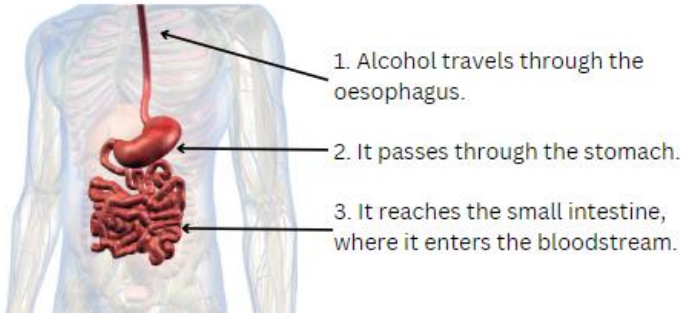
WHAT HAPPENS TO ALCOHOL IN THE BODY

Once alcohol is swallowed, it is absorbed very quickly by the blood and spreads easily to all organs. Since alcohol molecules are very tiny, they do not require digestion like food and they dissolve easily in water (main component of the human body).

Absorption

When alcohol is swallowed it passes through the oesophagus into the stomach before passing into the small intestine. It is absorbed directly into the bloodstream through the stomach (20%) and small intestine (80%), where a concentration of small blood vessels gives it ready access to the bloodstream. The slower the absorption rate, the lower the amount of alcohol in the blood.

Diagram showing the absorption of alcohol in the body



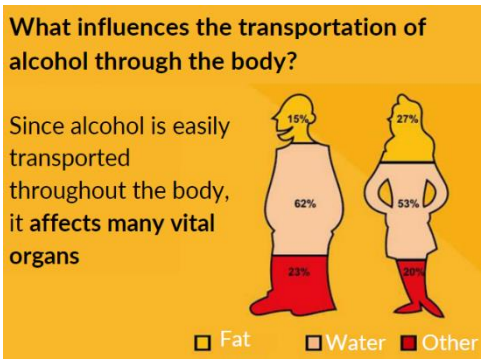
The amount and type of food present in the stomach has a direct and measurable effect upon the rate of alcohol absorption. If the stomach is empty, the pyloric sphincter, which sits between the stomach and the small intestine, will be open. Consequently, if someone drinks alcohol on an empty stomach the alcohol passes straight through the open pyloric sphincter into the small intestine and hence is absorbed more rapidly. Food (especially greasy, high-protein and fatty foods) retards absorption and so blood concentrations will be lower than those achieved on an empty stomach. Also, when food is in the stomach, the enzymes in charge of digesting food will have more time to act on the alcohol.

The amount and type of food in the stomach has an effect upon the rate of alcohol absorption

Empty stomach = Faster absorption

Full stomach = Slower absorption

Circulation

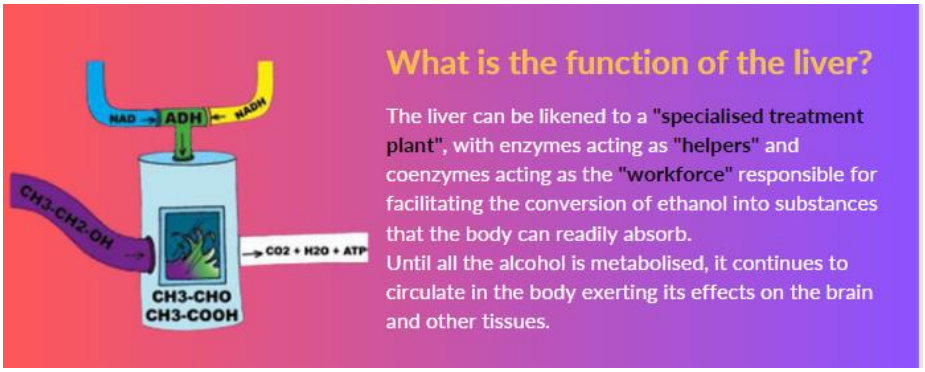


Alcohol circulates around the body where it is dissolved in proportion to the body's water content. Women have a lower proportion of water than men resulting in higher blood concentrations than men for the same amount of alcohol consumed.

Once in the blood stream alcohol is carried to the organs/tissues of the body, where they are exposed to the same concentration of alcohol as the blood. The exception is the liver, whose exposure is greater because blood is received directly from the stomach and small intestine. For most healthy people, blood circulates through the body in 90 seconds. This allows alcohol to affect your organs in a short amount of time.

Metabolism

Metabolism is the chemical reactions in the body's cells that change food into energy.



The liver is the key organ responsible for removing ethanol from the bloodstream through a transformative process called oxidation. In fact, around 90% of the alcohol ingested is converted into other chemicals as part of the metabolic chemical reactions in the liver.

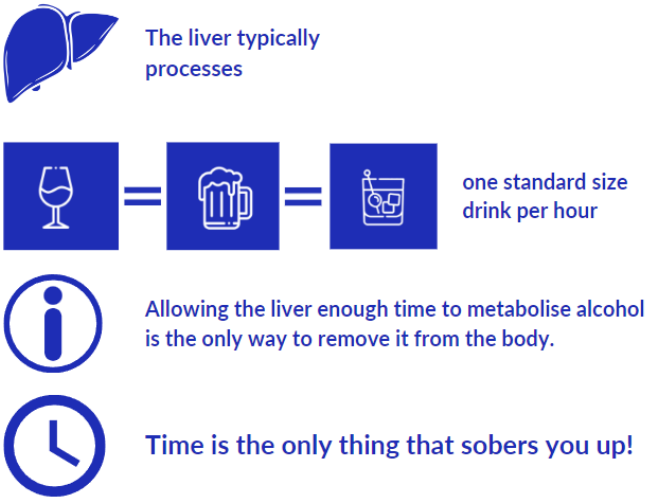
Oxidation occurs through enzymatic breakdown, helped by enzymes (ADH, ALDH) and co-enzymes (NAD, NADH), which break the alcohol down in three stages:

1. C2H5OH (alcohol) becomes CH3CHO (acetaldehyde). **Acetaldehyde is toxic to the human body, and it is important that it gets further oxidised as quickly as possible.**
2. CH3CHO (acetaldehyde) becomes CH3COOH (acetic acid).
3. CH3COOH (acetic acid) becomes CO2 (carbon dioxide) and H2O (water).

During this process a considerable amount of energy (ATP, Adenosine triphosphate) is produced which is why alcoholic beverages are classed among the foodstuffs.

The next time you have an alcoholic drink think about the chemical reactions taking place in your body!

Speed of metabolism



The speed of metabolism depends to a large extent on liver function. No matter how much has been consumed, the liver metabolises alcohol at a very constant rate and cannot speed up the detoxification process. This rate is around 8-10 grams of alcohol per hour, or the equivalent of a standard drink, in men and a little less for women.

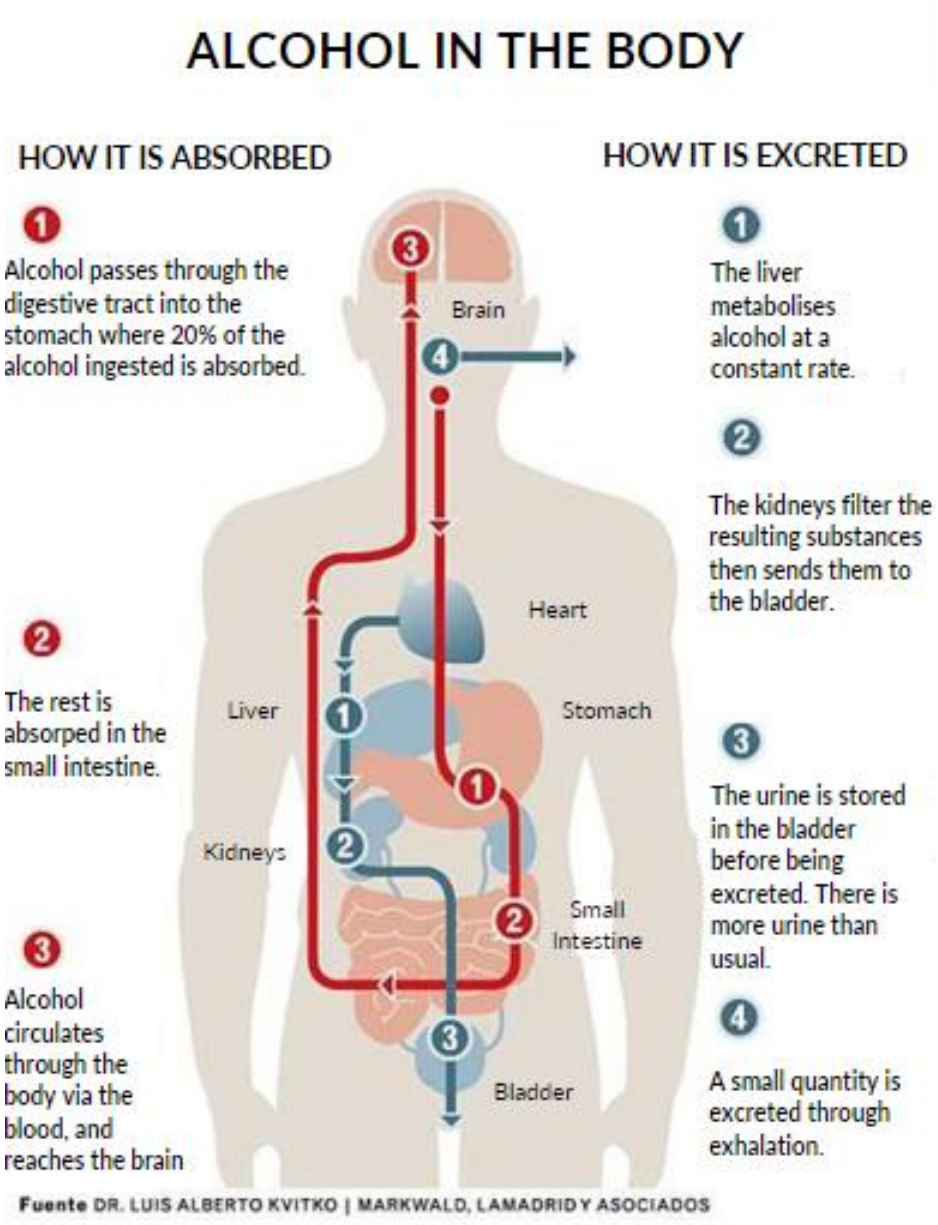
The rate of metabolism depends partially on the number of metabolising enzymes, which vary depending on the person and their sex (enzymes are found in greater quantity and quality in the male liver).

Since alcohol is metabolised more slowly than it is absorbed, intake must be controlled to prevent it from accumulating in the body and causing intoxication.

Excretion

The remaining 10% of alcohol is excreted without transformation, through breathing and through urine. Small amounts are also excreted in sweat, tears, and breast milk.

Since alcohol is excreted this way it can be measured using various instruments in exhaled breath, urine, and tears. This means the approximate blood alcohol level (BAL) can be estimated.



HOW ALCOHOL EFFECTS YOUR BODY

Alcohol is transported throughout your body in your blood, so it affects your body in many ways. Depending on how much you drink, the first effects can include feelings of relaxation and loss of inhibitions. However, since alcohol exerts a depressant effect on the functions of the Central Nervous System and inhibits the way the neurons in your brain communicate, the more alcohol you drink, the more your feelings and behaviour changes.

Contrary to popular misconception, alcohol acts as a depressant not a stimulant. Though initial consumption might lead to feelings of euphoria and spontaneity, these sensations are transient.

Effects of harmful alcohol use

Harmful alcohol use includes any alcohol use that puts your health or safety at risk or causes other alcohol-related problems. It encompasses a spectrum of unhealthy alcohol drinking behaviours, ranging from binge drinking (drinking excessively within a short period of time) to Alcohol Use Disorder (AUD).

Some effects are immediate and last only a while whilst others accumulate over time and may significantly affect your physical and mental health and quality of life.

Short-term effects

Short-term effects from harmful drinking usually reverse themselves once the alcohol has been processed by and eliminated from the body.

Intoxication

Intoxication results from the harmful use of alcohol over a short period of time, resulting in BAC (blood alcohol concentration) levels of approximately between 0.11% and 0.17%. This happens because you drink faster than your liver can break down alcohol. The higher your BAC level is, the more likely you are to have bad effects. Alcohol intoxication causes behaviour problems and mental changes. Symptoms include:

- Slurred speech.
- Poor coordination and reflexes.
- Poor judgement.
- Sense of euphoria or giddiness.
- Reduced inhibition and increased impulsivity.
- Unstable moods.
- Problems sleeping.
- Feeling unwell.
- Feeling hungover the next day.

Poisoning

Excessive alcohol use on a single occasion can also put you at risk of alcohol poisoning. This can occur when your body is overwhelmed by the amount of alcohol you drank and is no longer able to effectively process it from your system. In addition to the above symptoms, alcohol poisoning can cause:

- Irregular breathing.
- Seizures.
- Low body temperature.

- Difficulty remaining conscious.
- Coma.

Long-term effects

Excessive drinking above the recommended levels on a regular basis can affect many different aspects of your life. These include how you feel, how you behave and how your body functions and changes can be permanent. Examples of possible problems include:

- Organ damage, such as to the liver, heart or brain.
- Stomach problems.
- High blood pressure.
- Increased chance of developing certain cancers.
- Muscle weakness.
- Damaged nerves.
- Libido reduction.

Alcohol Withdrawal

Abusive or improper consumption of alcohol can cause a physical and emotional dependency on alcohol in some people. It can occur when alcohol use has been heavy and prolonged and is then stopped or greatly reduced.

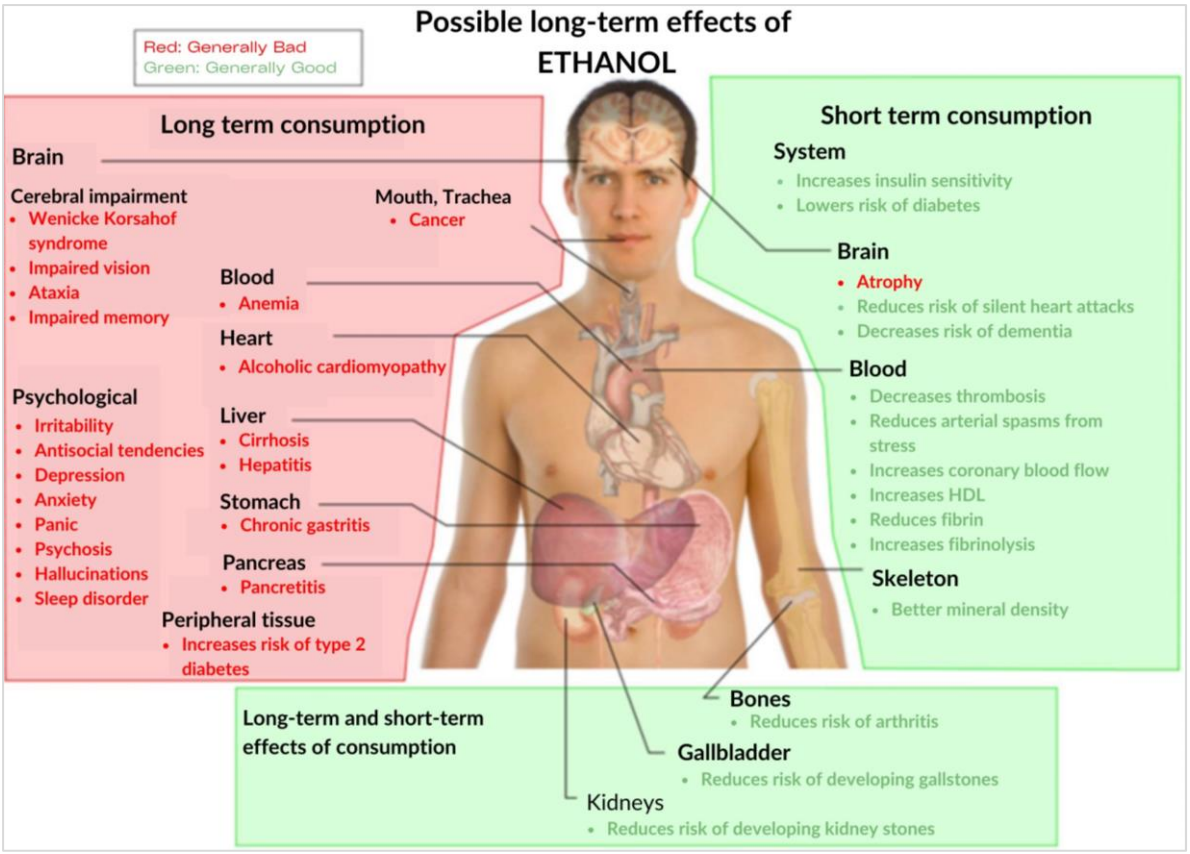
Symptoms of withdrawal include sweating, agitation, nausea, tachycardia, vomiting, anxiety, tremors, and nervousness. In severe cases, it may lead to confusion, hallucinations (delirium tremens), and seizures, and can be life-threatening. Symptoms result from the body's adaptation to the lack of alcohol. As the body adapts, there is a sudden increase in neuron excitability leading to withdrawal symptoms.

Alcohol Tolerance

Tolerance is the body's ability of adapting to substances like alcohol. It is caused by changes that occur in neurons (brain) and enzymes (liver) to compensate for alcohol abuse. Over time, someone who drinks regularly or heavily may need to consume more alcohol to feel the same effects. A person with a high tolerance may appear sober to others when they are extremely impaired.

Tolerance can cause permanent disorders in the brain. It can also cause:

- Liver disease.
- Central Nervous System impairment.
- Heart failure.
- Ulcers in the stomach
- Inflammation of the pancreas.
- Malnutrition.
- Anxiety disorders, personality disorders, etc.
- Work and social problems.



An understanding of the risks and benefits potentially associated with alcohol consumption helps you to make more informed decisions about alcohol.

RESPONSIBLE DRINKING

When consumed responsibly by adults, alcohol can be part of a balanced, healthy lifestyle and play a positive role in social occasions and celebrations. It is enjoyed by millions of people around the world.

However, as much as alcohol can be enjoyable and fun, it may lead to negative consequences if not consumed responsibly. Just like other things in life, moderation is key. Being a responsible drinker means knowing when to drink, how much is too much, planning, and being in control of your drink.

To reduce the lifetime risk of harm from alcohol-related disease or injury, you should follow responsible drinking guidelines. This section can help you to understand responsible drinking and staying within moderate low-risk guidelines.

Understanding Standard Drinks (SDs)

A Standard Drink (SD) is a measure of alcohol consumption representing a fixed amount of pure alcohol. The term is often used to educate alcohol users about recommendations related to alcohol consumption, how much alcohol is consumed in a given beverage, and its relative risks to health. It takes your body around one hour to process one SD.

The definition of a standard drink varies from country to country and some countries label beverages with the equivalent number of standard drinks. Although there is no international SD, it is generally an average of between 8 and 13 grams of pure alcohol per SD, with 10 grams being the most common.

A hypothetical alcoholic beverage sized to one SD varies in volume depending on the alcohol concentration of the beverage (for example, one SD of spirits takes up much less space than one SD of beer), but it always contains the same amount of alcohol.

Calculating the grams of pure alcohol in a drink

A standard drink measures the amount of pure alcohol, not the amount of liquid consumed. To calculate how much pure alcohol is in a drink, you need its % ABV strength, its volume (in ml) and the volumetric mass density of pure alcohol (0.8). The formula is:

(Volume x ABV) x 0.8 / 100

The following examples show the volume of pure alcohol consumed in grams:

- A 100ml glass of wine at 13% ABV: (100 (ml) x 13) x 0.8 / 100 = 10.4 grams of pure alcohol.
- A 330 ml glass of beer at 4% ABV: (330 (ml) x 4) x 0.8 / 100 = 10.6 grams of pure alcohol.
- A 30ml glass of spirits at 40% ABV: (30 (ml) x 40) x 0.8 / 100 = 9.6 grams of pure alcohol.

Pure alcohol: The amount of alcohol in drink. The amount of pure alcohol in a standard drink depends on the type and amount of alcohol in the beverage.
Alcohol by volume (ABV): The measure of pure alcohol as a percentage of a drink's total volume of liquid. It is usually listed on labels. For 4% ABV of beer, litre contains 4cl of pure alcohol.
Volumetric mass density of pure alcohol: It has a density of 0.793g/cm3 (at 20 °C) which is rounded to 0.8 for the calculation above. This means pure alcohol weighs 800g per litre.

Understanding Blood Alcohol Concentration (BAC)

The amount of alcohol in your bloodstream at any given time is the Blood Alcohol Concentration (BAC). Alcohol enters the bloodstream in as little as 5 minutes, achieving a peak BAC in around 30 to 90 minutes. A person's level of impairment from alcohol is directly connected to their BAC.

The blood alcohol level is the concentration of alcohol in blood or in breath, and, the number of grams or milligrams in a litre of blood or air.

Different factors affect the BAC, such as how much you drink, your pattern of drinking, your body size and composition, age, genetics, the presence of food, metabolism, and social factors.

Factors that affect your BAC level include:

- **Food:** Drinking on an empty stomach means the alcohol is rapidly absorbed so BAC levels rise quickly. Having food in your stomach retards absorption so BAC levels are lower than those achieved on an empty stomach.
- **Rate of consumption:** Drinking quickly will increase the amount of alcohol in your system because the liver can only metabolise around one unit of alcohol an hour.
- **Body weight:** People who weigh less will generally have a higher BAC level than someone who weighs more. This is because people who with greater body weight have more blood and water in their bodies, which assists the dilution of alcohol.
- **Type and strength of alcohol:** Low alcohol doses accelerate stomach emptying whilst high doses delay emptying. Thus, high doses of alcohol tend to delay and increase the peak BAC. Drinks aerated with carbon dioxide (for example champagne) are absorbed quicker because they increase the rate of the opening of the pyloric valve, and thus gastric emptying time. Drinks high in sugar have a delayed absorption rate in much the same way food delays absorption.
- **Gender:** After consuming comparable amounts of alcohol, women tend have higher BACs than men. This is because of the difference in size, weight, and body composition of the sexes, with women tending to have relatively more fat and less body water than men. Also, the enzyme alcohol dehydrogenase that breaks down alcohol lower in women as well.

BAC can be measured by breath (breathalyser), blood or urine tests. It can also be estimated by using a calculation.

The maximum BAC-level a person has after having consumed alcohol can roughly be estimated with the help of "Widmark formula". This formula is a rough indicator only, and can be given as follows:

Grams of pure alcohol / (Body weight in kilograms x R) = BAC-level (in g/l)

R = diffusion coefficient (0.70 for men and 0.6 for women)

Example for a man: A man weighing 75 kg, drinks two 140 ml glasses of wine at 12% ABV. To work out his estimate blood alcohol content:
Step 1: (280 x 12) x 0.8/100 = 27 grams of pure alcohol.
Step 2: 27 / (75 x 0.7) = 0.51 g/l BAC level.

Example for a woman: A woman weighing 70 kg drinks one 140 ml glass of wine at 14% ABV.
Step 1: (140 x 14) x 0.80 /100 = 16 grams of pure alcohol.
Step 2: 16 / (70 x 0.60) = 0,38 g/l BAC level.

Understanding low-risk drinking guidelines

Drinking, like eating, or any social activity has some guidelines to help people make more informed decisions. Responsible choices concerning moderate drinking may mean not drinking, such as when a person is sick, taking medications, being pregnant or being the designated driver. Responsible drinking means that you never have to feel sorry for what has happened while you were drinking.

Moderate alcohol consumption can be part of a balanced lifestyle. There is no drink of moderation, only a practice of moderation! By contrast, excessive consumption of any alcoholic beverage can have negative short- and long term impacts on your physical health and well being.

Alcohol-related issues arise from the improper or excessive consumption of alcoholic beverages; therefore, it is recommended to stay within moderate low-risk consumption guidelines.

On average across the EU the recommended low-risk drinking guidance is “no more than 2 drinks a day and not every day”. These recommendations are intended as guidelines since the intake of alcoholic beverages does not affect everyone equally. Various factors such as weight, gender, age, prior food consumption, the pace of consumption occurs, etc., all play a role.

Tips for responsible drinking

Before drinking:

- ✓ Eat and drink water before.
- ✓ Set yourself a drinks limit and stick to it.
- ✓ Plan how you’re going to get home before you go out. This may include:
  - Deciding with your friends who will be the “designated driver”.
  - Making sure you have enough money for an uber/taxi home.
  - Using public transport.
- ✓ Never drive to a drinking event, leave your keys at home.

While you’re drinking:

- ✓ Keep track of how much you consume by counting “standard drinks”.
- ✓ Know when you’ve had enough and say so.
- ✓ Be aware of how alcohol affects you.
- ✓ Try to drink one alcoholic drink per hour. You can do this by:
  - drinking non-alcoholic drinks as well as alcoholic drinks.
  - opting for low-alcohol drinks.
  - sipping rather than gulping your drink.

  - putting your glass down when not drinking.
  - not trying to keep up with other drinkers.
  - finishing your drink before you start another, rather than topping up your glass.
- ✓ Avoid drinking in rounds (especially with friends who drink too much), drinking games and shots.
- ✓ Don't mix alcohol with sugary or energy drinks.
- ✓ Avoid salty snacks. They can make you thirsty and more likely to drink more.
- ✓ Try to resist pressure from friends who want you to drink when you don't want to.

After drinking

- ✓ Only get in the car with a sober driver.
- ✓ Don't drink and drive. The more drinks you have, the more likely you are to have a road accident. Road accidents can involve other people, not just you.

Say "no" if you're...

- ✓ underage (under 18 years old)
- ✓ pregnant
- ✓ planning a pregnancy
- ✓ breastfeeding
- ✓ feeling depressed or anxious
- ✓ feeling unsafe
- ✓ don't want to drink
- ✓ taking other medicines that might interact with alcohol

Groups who shouldn't drink

The above recommendations should not be applied to:

- Specific at-risk groups: underage, drivers, and pregnant women.
- Individuals with certain conditions that may be worsened by the consumption of alcoholic beverages (for example, hypertension).
- Individuals taking medications that are incompatible with alcohol. The side effects of combining alcohol certain medications ranges from mere discomfort to life-threatening reactions.
- Individuals carrying out certain activities such as driving vehicles or operating machinery.

In these cases, responsible consumption means abstaining altogether.

Underage

Minimum legal drinking age

While most European countries uphold a minimum legal drinking age (MLDA) of 18 years, some countries, such as Austria, Belgium, Denmark or Germany, allow the consumption of beer and wine at 16 years. The legal age is set because alcohol can be very dangerous to the young: They generally lack experience in dealing with alcohol and their internal organs haven't finished developing.

Effects of alcohol on the underage

The consumption of alcoholic beverages in adolescence negatively affects the central nervous system, producing alterations in behaviour, learning and memory. It also produces digestive, hepatic, cardiovascular and endocrine disorders (decreased growth hormone, decreased testosterone in males and increased in females). It can also cause changes in bone density. (Source: Ministry of Health and Consumption, Spain).

- **Effect on the brain:** Alcohol affects the adolescent brain differently from the adult brain. The adolescent brain is not mature until about age 24. Thus, they are more susceptible to memory loss and damage to the hippocampus, a brain structure involved in learning and memory.
- **Effect on alcohol use:** There is extensive research to show that the earlier a person drinks alcohol in their life the more likely they will have an alcohol use disorder as an adult. More specifically an adolescent who starts to drink alcohol before the age of 15 is 4 times more likely to develop addiction to alcohol as an adult compared to a person who starts to drink alcohol as an adult.
- **Other effects of alcohol use:** Using alcohol as an adolescent can also increase the risk of academic problems, such as low grades in school; social problems, such as fighting or lack of participation in youth activities; and psychiatric disorders, such as depression and anxiety.

In general, the risk of adolescents experiencing these problems is greater for those who binge drink (drinking excessively within a short period of time) than for those who do not binge drink.

The adolescent brain is not yet fully developed. As a result, alcohol can interfere with critical cellular events that help to form the adult brain. Also, repeated drinking by adolescents damages the hippocampus, possibly increasing the risk of cognitive problems or even Alzheimer's disease in later life.

These effects should be enough to emphasise the dangers of underage consumption and the importance of abstention at this age.

Why do some adolescents drink?
To understand why some adolescents drink, it is important to understand the social and personal expectations that motivate them why they are attracted to alcohol.

Studies show a relationship between underage drinking behaviours and the drinking behaviours of adult relatives and adults in the same household. Among adolescents whose peers drink alcohol, those whose parents binge drink are more likely to drink alcohol than those whose parents do not.

Also, adolescence is a period of development where physical, psychological, and social identity is built. Curiosity leads to experimentation. In this context adolescents associate leisure time and group activity, therefore the pattern of adolescent consumption is different from that of adults. Adolescents usually drink in their leisure time and among friends.

In combatting underage consumption, it is important that parents, teachers and others close to adolescents, listen to them, talk to them and support them.

Pregnant women

When you are pregnant or trying to get pregnant it is best to abstain from drinking alcohol. A healthy diet, including adequate fluid intake and not smoking during pregnancy also helps create a healthy environment for the foetus.

Why pregnant women should abstain
Alcohol in the mother's blood passes to the foetus through the umbilical cord. Alcohol use during pregnancy can cause miscarriage, stillbirth, and a range of lifelong physical, behavioural, and intellectual disabilities. These disabilities are known as foetal alcohol spectrum disorders (FASDs).

How much alcohol is dangerous?
While it is not known exactly how much alcohol has to be consumed by the mother to cause damage to the foetus, the link between alcohol consumption by a pregnant woman and damage to the foetus has been definitely established. Therefore, for women who are pregnant or are trying to become pregnant, the safest course is to abstain from alcohol.

When alcohol is dangerous?
There is no safe time for alcohol use during pregnancy. Alcohol can cause problems for the foetus throughout pregnancy. Alcohol use in the first three months of pregnancy can cause the baby to have abnormal facial features. Growth and central nervous system problems (e.g., low birthweight and behavioural problems) can occur from alcohol use anytime during pregnancy. The foetus's brain is developing throughout pregnancy and can be affected by exposure to alcohol at any time.

Alcohol and breast feeding
It's best for breast feeding mothers to abstain from alcohol. This is because the alcohol circulating in the mother's blood passes into her breast milk and can cause irritability in the baby, poor feeding, and sleep disorders. The amount of milk that is produced is also reduced.

There is no known safe amount of alcohol use during pregnancy. There is also no safe time for alcohol use during pregnancy. All types of alcohol are equally harmful, including wine and beer.

Drivers

Driving under the influence of alcohol is dangerous. There is no dispute that alcohol affects a person's ability to drive. It impairs driving skills and significantly increases the possibility of accidents. When driving, the safest bet is always to stay sober (0.0g/l of alcohol).

How alcohol affects driving ability

Driving ability may be impaired after just one or two standard drinks. A BAC as low as 0.05g/l can already affect speed, steering, judgment, reaction times, and visual detection. Also, decisions dealing with concrete traffic situations (safely overtaking other cars, giving way, etc), scanning capabilities, and information processing also begin to deteriorate at very low BAC levels. Impaired drivers are less able to judge distances, estimate the velocity of moving objects and will take greater risks than if they had not consumed alcohol. In addition, because judgment is affected, drivers are more inclined to think that they are still able to drive safely "I feel fine," or "I only had a couple."

Driving under the influence of alcohol can considerably multiply the chances of having a traffic accident. Alcohol affects the senses, reflexes, motor skills, speed judgement, response time, coordination, visual acuity, etc.

BAC level and corresponding effect on driving

BAC level (g/l)	Effect	Risk of having an accident multiplied by
0.15	Decreased reflexes	1.2
0.20	Difficulty judging distances	1.5
0.30	Underestimating speed Motor skills disturbance and euphoria	2
0.50	Increased reflex time and mild behavioural disruptions	3
0.80	General behavioural disorder, confusion, disorientation	4.5
1.15	Tiredness, fatigue, loss of visual acuity, state of drunkenness	9
1.50	Noticeable drunkenness	16
2	Confusion and motor skills incoordination lead the individual to lose autonomy	-
3 – 4	State of apathy and discouragement	-
4 – 5	Alcohol coma	-
5+	Death can occur	-

Fuente: Alvorez de/ R/o, 2007.

How much it is safe to drink and still drive

It is impossible to say that a certain number of grams of alcohol or a certain number of drinks will keep you below a government set limit or ensure your driving is safe. As explained elsewhere in this manual,

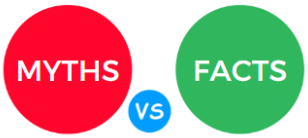
the amount of alcohol in your blood depends on age, sex, size and what you've eaten among other factors. This means it is impossible to predict the exact effect and therefore the only truly "safe" level is not to drink alcohol at all when driving.

The law on drink-driving

Legislation on alcohol and road safety is essentially based on measuring the amount of alcohol that the individual has in their blood when they get behind the wheel. Most countries have laws about drinking and driving. In those that do, this varies from 0.00% BAC ("zero tolerance") to 0.08%. Where there is a set limit, breathalysers and blood samples are usually used to calculate the concentration.

In Romania, legislation on drink-driving is strict, aiming to ensure road safety for all. The law establishes clear limits for Blood Alcohol Concentration (BAC) and uses breathalyser and blood tests to measure a driver's BAC level. This means zero tolerance for drinking and driving, where any trace of alcohol in the bloodstream is considered a violation.

MYTHS



There is a whole series of false topics related to alcohol that can lead to the improper consumption of alcoholic beverages.

Myths about the effects of alcohol on the body

MYTH	Alcohol gives you energy.
	VS
FACT	Alcohol is a nervous system depressant. It reduces the ability to perform any activity, such as driving, for example.

MYTH	Drinking beer cause less harm to health than drinking wine/spirits.
	VS
FACT	Harm is mainly caused by alcohol in the drink. Therefore, alcohol-related harm does not depend on the type of drink (beer or wine/spirits) but on how many grams of alcohol are consumed and the pattern of drinking.

MYTH	Mixing beer, wine, and spirits makes you drunker than drinking just one type of alcoholic drink.
	VS
FACT	Consuming different types of alcoholic drinks does not make you more drunk, but it can cause stomach upset and dizziness due to the mixture of different flavours. It is how much alcohol that you drink that determines how you are affected.

MYTH	Alcohol increases sexual arousal.
	VS
FACT	While it can make you more willing to have sex, it also decreases sexual arousal and potency, making intercourse less satisfying and less conscious.

MYTH	When you are used to drinking you get less drunk.
VS	
FACT	Alcohol tolerance develops because of abusive consumption. This does not mean that the person gets less drunk, but that they show fewer signs of intoxication.

MYTH	Alcohol helps people to forget their problems.
VS	
FACT	Very often the opposite is found to be true, people bring up forgotten problems only when they are intoxicated.

MYTH	Alcohol helps relieve stress.
VS	
FACT	As a depressant drug that can have a calming effect, alcohol may seem to provide short-term relief from stress, but it does nothing to remove the source of stress. Moreover, alcohol increases the level of biological stress that is placed on the body and rather than relieving stress, drinking alcohol can cause psychological and physiological harm and can compound the effects of stress.

Myths about protecting the stomach when drinking

MYTH	Have a spoon of oil before drinking alcohol.
VS	
FACT	Although it is true that oil creates a protective film in the stomach, it does not protect the entire absorption surface of the stomach or intestine. It does not prevent the alcohol from being absorbed into the blood so has no effect on BAC levels.

MYTH	Tonics, antacids and other substances that protect the stomach affect alcohol levels.
VS	
FACT	Although they may reduce the discomfort caused by the mixture of flavours or by vomiting, they do not affect blood alcohol levels.

Myths about how to mitigate or hide the effects of alcoholic beverages

MYTH	A cold shower or a strong coffee sobers you up.
VS	
FACT	Having a shower or drinking coffee, along with other "remedies" do not have the ability to reduce the amount of alcohol in the body. You feel more awake or alert, but you are still intoxicated. The only thing that reduces blood alcohol levels is metabolism in the liver. It around an hour for the adult body to eliminate the alcohol content of a standard drink and nothing can speed up this process!.

MYTH	Chewing a piece of gum or two coffee beans, or blowing a certain way fools the breathalyser.
VS	
FACT	There is no way to fool the breathalyser. The breathalyser measures alcohol so even if there are other substances in your mouth, they have no effect. Nor does blowing a certain way have an effect. Moreover, if the police suspect that you are trying "fool" the breathalyser, they may consider that you are committing a very serious offense!

Myths about the alcohol consumption and social behaviours

MYTH	I can stop drinking when it's time to drive.
VS	
FACT	This is a very dangerous habit and unfortunately a common practice among young people, since the peak BAC level occurs approximately one hour after the last alcoholic drink.

MYTH	I can drive well enough after a few drinks.
VS	
FACT	The effects of alcohol start sooner than people realise. Mild impairment (up to 0.05g/l BAC) already affects affect speech, memory, attention, coordination, and balance. The risks of a fatal crash for drivers with positive BAC compared with other drivers increase as the BAC increases.

MYTH	It's not my problem if one of my friends drinks a lot.
VS	
FACT	Although you can't force someone to change if they don't want to, you should at least try.

MYTH	It's ok for me to drink to keep up with my male friends (for women).
VS	
FACT	Women process alcohol differently. No matter how much a males drink, if you drink the same amount as them, your BAC level will tend to be higher, putting you at greater risk for harm.

MYTH	I need to drink alcohol to be trendy and part of the group.
VS	
FACT	Research shows that in a group drinking alcohol; even those who are not drinking can have an equally good time and behave in the same uninhibited manner. Forcing or urging someone to drink as a condition of group membership or acceptance can lead to tragic consequences, hospitalisation, sexual and other types of violence and even death.

For those who choose to drink, moderate alcohol consumption can be part of a safe, balanced, sociable, and enriched lifestyle.

Staying aware of the risks associated with harmful alcohol use (binge drinking, underage drinking, drink driving and drinking during pregnancy or breast feeding will help you to make more informed choices.