



LET'S TALK ABOUT ETHANOL

Ethanol (or alcohol) has been used for medicinal purposes since ancient times and still today in Australia, traditional ethanolic liquid extracts are one of the most popular dispensary products among modern herbalists.

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Ethanol is an excellent solvent

This popularity is due to the fact that ethanol is an excellent solvent for extracting the powerful healing properties of plants. An important reason ethanol is used in the production of The Herbal Extract Company's medicines is that it is able to extract more plant constituents than other substances used for extraction such as glycerol or water. With a wider range of constituents present, the end product is more efficacious. Certain constituents that do not dissolve in water or glycerol will dissolve in ethanol and vice versa. A liquid extract with 25% ethanol is thought to successfully extract water soluble herbal components such as tannins, mucilage and some glycosides (e.g. flavonoids and some saponins). Whereas 45% to 60% is thought to successfully extract water insoluble compounds such as alkaloids, most saponins, essential oils and some glycosides and 90% ethanol percentages can extract oleoresins and resins. Anthraquinones and chlorophyll are also soluble in ethanol. At the Herbal

Extract Company (HEC) pharmaceutical grade Australian sugar cane ethanol and purified water are combined in precise predetermined ratios to extract the herb's broad phytochemical profile using our unique continuous flow cold percolation method.

Ethanolic liquid extracts are more readily absorbed

In addition, herbal liquid preparations based on ethanol have shown superior bioavailability. For medicine to be effective the body must be able to absorb it efficiently. Medicine extracted into a liquid is more readily absorbed into the system than tablets or capsules for example.

Ethanol is an efficient preservative

Ethanol also contributes to the stability of these highly potent herbal medicines. The ethanol in herbal extracts is what keeps them from bacterial spoilage over time. It inhibits microbial growth,

enzyme action and hydrolysis. Provided the manufacturers' recommended storage conditions are observed the resulting herbal medicine can be kept for an extended period of time. The combination of ethanol and water provides the most stable and efficient solvent system for herbal extracts.

Liquid extracts offer dose flexibility

Liquid extracts are much stronger, volume for volume, than infusions or decoctions therefore the dose is much smaller. Ethanolic herbal extracts offer dose flexibility which is especially important when prescribing low doses for children who usually find liquids easier to take than tablets. For compliance in children and adults alike prescribing lower doses at greater frequency, or doses taken with food, water or small amounts of juice, are recommended.

Ethanol is a safe solvent

Despite being generally accepted as safe some practitioners have occasionally expressed concern about the possible exposure of their patients to the negative effects of ethanol. These effects are dose related and do not occur for the small quantities of ethanol used in herbal medicine. The amount of ethanol used in a dose of herbal medicine does not have any intoxicating effect and the use is strictly medicinal.

Toxicological and pharmacokinetic evaluations have shown that small amounts of ethanol applied with therapeutic doses are safe even for children. In 2017, safety data from more than 50,000 children in noninterventional paediatric studies with some ethanolic herbal products, as well as data from routine clinical use in several million children, was assessed. No evidence of the involvement of the ethanol content in any adverse drug reactions was found. The researchers concluded that the studied medicinal herbal products were safe in the age groups for which they are authorised or registered and that the labelling was adequate to allow for their safe use in the paediatric population.

An earlier scientific study examined the toxicological relevance of ethanol in herbal medicinal products with regard to ingested amounts, metabolism and elimination in children. They compared the amount

of ethanol ingested in the recommended dose of liquid extractions of popular herbs such as ivy, thyme, chamomile and valerian to the amounts of ethanol produced by the metabolism of common carbohydrates such as bananas, fruit juice and bread. The amounts found in the bloodstream after ingestion of these foods are consistently higher than the amounts found after ingestion of the recommended dose of ethanolic tincture. Examining reports from poison control centres the researchers found no published reports of intoxication with herbal medicinal products. The most common intoxicant for young children was mouthwash. They concluded that when used at the recommended dose the health risk of ethanol containing herbal medicinal products is negligible.

Herbal medicine doses contain very small amounts of ethanol

According to the Australian Government, drinking ethanol can be part of a healthy lifestyle as long as Australian guidelines are followed. These guidelines recommend healthy adults should drink no more than 10 standard drinks a week and no more than four standard drinks on any one day. A standard drink contains about 10 grams of ethanol which is the amount the body can process in one hour. One standard drink is equivalent to a 100mL serve of red wine (13.5%), a 375mL bottle of mid strength beer (3.5%) or 30mL of straight spirit (40%). How much alcohol a person can handle depends on their age, weight, gender and how they feel at the time.

One 5mL daily dose of a herbal medicine contains as much ethanol as approximately one eighth of a standard glass of wine or beer as recommended by the Australian authorities (e.g. approximately 1.25g ethanol is contained in a 25% liquid extract such as HEC alfalfa). Ingestion of small amounts of alcohol are processed by the liver and eliminated so rapidly that they may not produce a readable blood alcohol level.

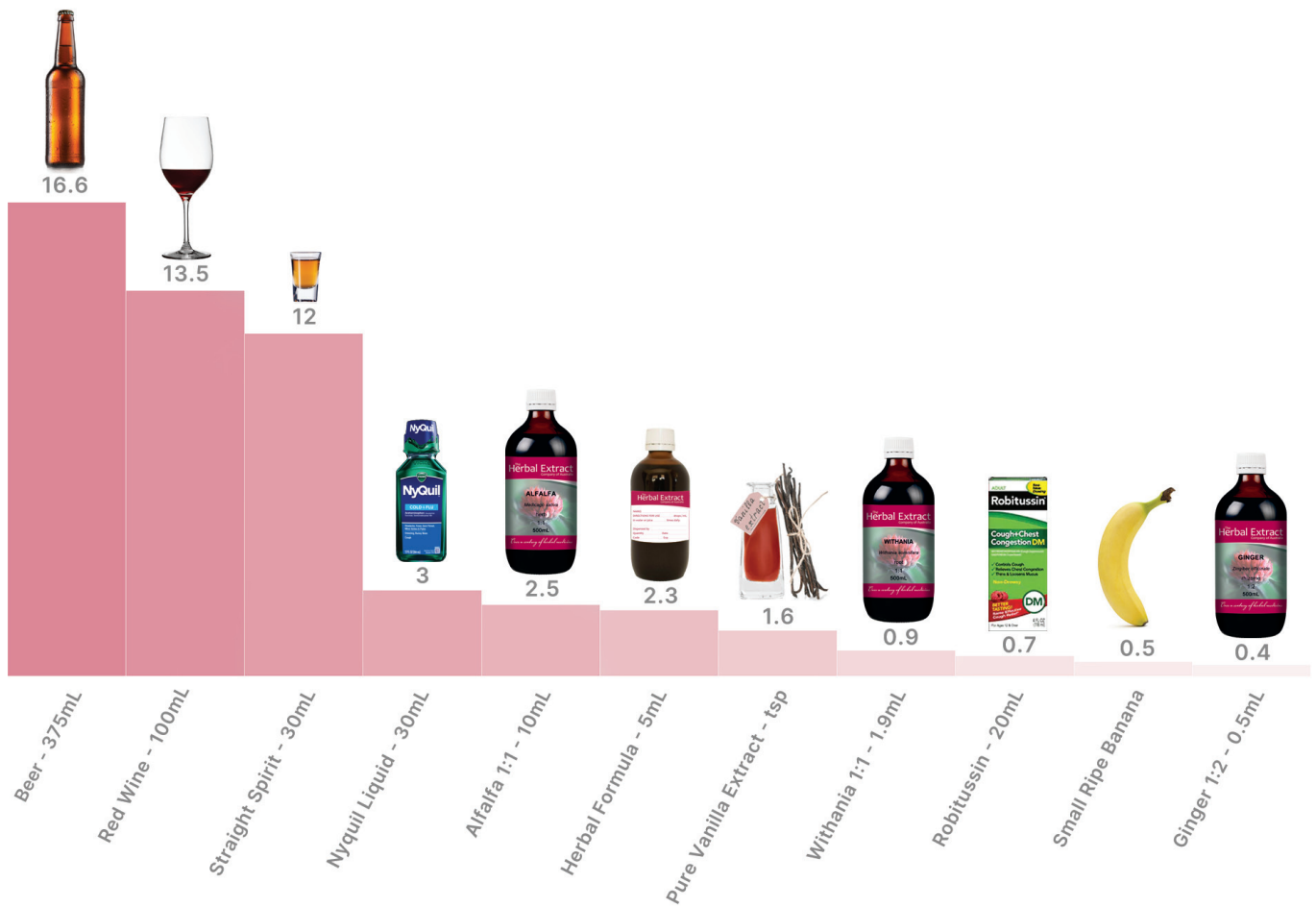
Exposure to small amounts of ethanol is natural

There is good evidence that the regular consumption of small amounts of ethanol may be beneficial, at least in healthy adults, for health

and life expectancy. The human body is naturally conditioned to a small exposure to ethanol from the natural fermentation of food and ripe fruit. A 2016 study found that orange, apple and grape juice contain substantial amounts of ethanol (up to 0.77g/L) and certain packed bakery products such as burger rolls or sweet milk rolls contained more than 1.2g ethanol/100g. The study also found that the average ethanol exposure for a six year old child is almost two fold (average) or up to four fold (high) higher than the lowest exposure from herbal medicines (6mg/kg b.w.).

Health benefits of ethanol

Moderate alcohol consumption may provide some health benefits such as reducing the risk of developing and dying of heart disease, possibly reducing the risk of ischemic stroke (when the arteries to the brain become narrowed or blocked causing severely reduced blood flow) and possibly reducing the risk of diabetes. While moderate alcohol use may offer some health benefits, heavy drinking, including binge drinking, has no health benefits.



Graph showing alcohol content per standard serve/dose in grams
Herbal formula compounded contains: Turmeric 1:2, Devil's Claw 1:1, Ginger 1:2 and Passion Flower 1:1

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