



## The plant

# Grape co-products as natural antioxidant reservoir

**The co-products of winemaking have many properties that can be beneficial in animal farming.**

**G**rapes are cultivated all over the world and are the world's largest fruit crop with an annual production of over 67 million tons. The grapevine (*Vitis vinifera*) originates from West Asia. It was then introduced worldwide for winemaking. After the process of wine or juice making, the seeds and skin (pomace) of grapes becomes undesirable by-products. This 'waste' is rich in bioactive compounds such as secondary metabolites. The main active compounds present in the by-products of winemaking are polyphenols (70%) such as flavonoids or stilbene derivatives<sup>1</sup>. Extracts of grape skins (phenolic acids, flavanols, anthocyanins, stilbenes) and seeds (plus proanthocyanidins) possess many activities, studied *in vitro* and *in vivo*, which can improve the well-being of animals.

Phenolics and flavonoid-rich extracts of grape seeds demonstrated antioxidant and free radical scavenging activities<sup>2</sup>. Molecules such as procyanidin or gallic acid have been reported to be good agents of cellular prevention against oxidative damage of DNA at cellular level. The antioxidant power of grape skin and seed extracts provides an important alternative as a partial substitute for vitamin E in animal diets. The antioxidant potential of grape seed polyphenols is 20 times higher than vitamin E and 50 times higher than vitamin C<sup>3</sup>.

In addition to antioxidant activities, these compounds also show antibacterial, antiviral and antifungal activity. Procyanidin, present in grape seed extract, has shown anti-influenza A activity and could inhibit virus replication at different stages of its life cycle<sup>3</sup>. Skin and seed extracts



Grape derivatives are an interesting source of polyphenols

demonstrated their efficacy to decrease the number of *Listeria monocytogenes* cells<sup>4</sup> and the polyphenols contained in these extracts have antibacterial effects against MRSA (Methicillin resistant *S. aureus*). Numerous other studies have highlighted other effects of these extracts and phenols present in them such as hepatoprotective effects, effects on inflammatory diseases or on the reproductive system make these extracts a good candidate to support the welfare of farm animals<sup>3</sup>.

[1] Nassiri-Asl and Hosseinzadeh, *Phytotherapy Research* (2016).

[2] Liang *et al.*, *PLoS one* (2014).

[3] Brenes *et al.*, *Animal Feed Science and Technology* (2016).

[4] Rhodes *et al.*, *International journal of food microbiology* (2006).

## World of botanicals

### Beneficial effects of plants explained by plant and animal co-evolution

The xenohormesis concept is based on the hypothesis that plants and animals, submitted to similar environmental stresses, co-evolved to adapt the changes and survive. Plants developed defense secondary metabolites (SM) pathways whereas animals acquired the capacity to recognize and use those non-nutritive molecules coming from plants. As an example, the repetitive use of plant SM by animals at dietary low dose such as quercetin, curcumin, resveratrol, allicin, was able to activate the key cellular redox sensor Nrf2 (transcription factor). This could be involved in the non-toxicity of the SM-enriched plant consumed by the animal as well as survival advantages of the animal against environmental stresses.

Surh, *Annals of the New York Academy of Sciences* (2011).

### Flavor supplementation in gestating-lactating sows

The supplementation of sow feed with a milk flavor at 1 g/kg diet between d90 of gestation and d25 post-farrowing was studied. Flavor supplementation tended to increase ADFI of sows by 0.33 ± 0.1 kg/d ( $p=0.09$ ) and increased weaning litter weight, litter weight gain, weaning body weight (+1.14 ± 0.21 kg) and ADG of piglets ( $p<0.05$ ). The flavor supplementation modified the community composition of microbiota from fecal samples: it increased the abundance of some beneficial genera (*Phascolarctobacterium*,  $p<0.05$ ) and decreased the quantity of potentially pathogenic bacteria (eg *Terrisporobacter*, *Escherichia-Shigella*,  $p<0.05$ ).

Wang *et al.*, *Animal Nutrition* (2021).



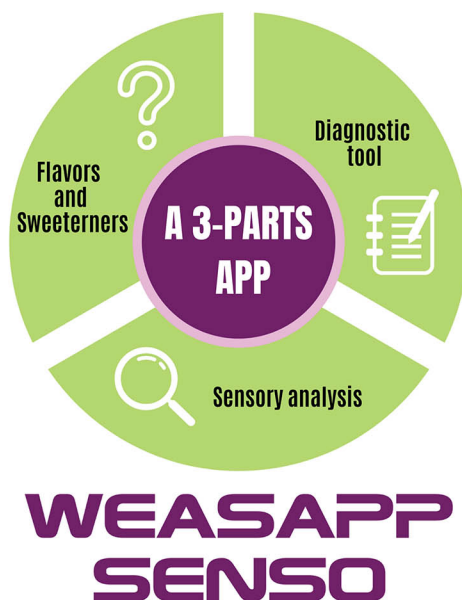
## LAUNCH

### ID4FEED launches WEASAPP SENSO, the first app which helps the feed-industry players to find their perfect sensory enhancer match

**Tell us your technical constraints. Tell us what flavor you are looking for. Our algorithm will match you with our closest product reference to fit your needs. No perfect match? Let us develop a custom product meeting your expectations.**

ID4FEED decided to think differently about feed sensory enhancers and to explore the possibility of a matching system. This is the objective of WEASAPP SENSO, a 3-parts app developed by ID4FEED in collaboration with its partner BORDAS. Two parts of this app are meant to be informative:

- The flavors & sweeteners part, which serves to outline the benefits of using sensory enhancers in animal diets, the mode of action of those products and details the "ECP" approach to characterize the flavors, i.e. the "Expansiveness", the "Character" and the "Persistence" of a product.
- The sensory analysis part, which presents this scientific discipline that use the human sense to evaluate the product characteristics through some specific panel tests.
- The core of the app is the diagnostic tool which will ask you a series of questions to fully understand your needs.



First, the goal is to underline your technical expectations: targeted species of animals, type of product (flavor or flavor combined with a sweetener), form of the product you need (powder, liquid), desired incorporation rate, targeted cost of treatment, presence or not of bad smelling compounds to mask, shelf life for storage, shelf life in the feed, pelleting conditions. Then, it will calculate your ideal "ECP" score.

Finally, you will have to choose your flavor... Do you need a fruity flavor? Or rather warm or spicy? Let us guide you in a sensory experience!

Finally, the outcome is a selection of your top-3 products references with a % of match. The "missing" criteria will be underlined in red, so that you can further discuss with your technician. You can even download your results as a take-home recap.

**Ready to test it?**



## News

### ID4TECH, sister company of ID4FEED, invests in its new kneado-granulation production line in VALREAS (France)

ID4TECH (HEIDI4 Group, sister Company of ID4FEED), located in the South of France in the heart of aromatic plants area of production, is specialized in the eco-extraction of plants and the production of high value-added ingredients for animal nutrition. ID4TECH opens a new line in its plant, combining various technologies in an unprecedented way. This completes ID4TECH's offer from the production of plant extracts to their galenic formulations. The company is installing a high viscosity mixing/granulation line (KNEADO-GRANULATION technology developed by ID4TECH's R&D team), whose purpose is to mix, agglomerate and encapsulate plant and plant extracts in powder form into matrices that cannot be processed by other technologies. This investment will significantly increase the company's capacity to produce innovative solutions for the animal nutrition sector.

The products are marketed through its sister company ID4FEED for the animal nutrition market worldwide.



## DIARY

Clermont-Ferrand (France)  
**Sommet de l'élevage**

**5-8  
Oct.**

Anancy (France)  
**Biosis Days**

**25-26  
Oct.**

Geneva (Switzerland)  
**Feedinfo Summit**

**27-28  
Oct.**