



Distribution restricted to Veterinary Doctors and Nurses

English Edition

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Coriolus versicolor

CORPET is manufactured in the Netherlands by Mycology Research Laboratories, Ltd. (www.mycologyresearch.com), in accordance with "Good Manufacturing Practices" (GMP). Clinical tests carried out with *Coriolus versicolor* as an immunonutrient on 36 patients with Chronic Fatigue Syndrome evidenced a 35% increase in NK (Natural Killer Cells) activity⁽¹⁾. The significant development in NK (Natural Killer Cells) is explained by the activity of the enzymes contained in Corpet⁽²⁾. Corpet has undergone toxicity tests⁽³⁾.

- ◆ Composition of CORPET
- ◆ Effects of CORPET
- ◆ Cases of Use
- ◆ Supplementation scheme
- ◆ Method of Administration
- ◆ Clinical Cases
- ◆ Clinical History - Dog
- ◆ Enzymatic Analysis - Article
- ◆ Detoxification

Corpet News provides information on the use of mushroom nutrition (supplementation levels in specific clinical conditions) in small animals.

Immunonutrition in animals

What is Corpet – *Coriolus versicolor*?

CORPET – *Coriolus versicolor*, is a natural product that acts as an immunonutrient, i.e. a specific nutrient that stimulates the immune system by promoting the production of cells with immune functions. CORPET is composed of the biomass of the mushroom - *Coriolus versicolor* - and, as such, contains both the mycelium and the primordia (young fruiting-body).

Coriolus versicolor is atoxic and does not have any secondary side effects.

The therapeutic properties of mushroom nutrition in general are attributed to the presence of polysaccharides, anti-oxidants and enzymes. Clinical studies in Japan have been conducted on the extracted form of *Coriolus versicolor*, Krestin, or PSK with impressive results (See page 3 for more information).

In animal health, the role of mushroom enzymes in CORPET - *Coriolus versicolor* is to prevent oxidative "stress" as well as increase the immune system; thereby inhibiting the uncontrolled cell growth.



In which situations should CORPET be taken?

Mushroom nutrition aids the organism in a number of ways: 1) by stimulating the immune system to protect the organism from viral or bacterial infection, 2) by increasing the superoxide dismutase (SOD) levels within the organism thereby fortifying the immune systems against reactive oxygen species (ROS) and 3) by detoxifying the organism which can be important when undergoing anti-cancer treatments, such as chemotherapy or radiotherapy.

Additional attributes include reducing microbial activity and inflammation.

In this bulletin we seek to advise the veterinarian to consider the role of mushroom nutrition as a nutritional tool in his or her effort to treat small pets by enhancing the immune system against viral conditions as well improving the quality of life in palliative care.

Additional applications could include the use of mushroom nutrition in addressing:

- ◆ chronic fatigue due to age;
- ◆ immune support as anti-aging supplementation;
- ◆ stress reduction associated with travel and competition.
- ◆ immune support in "pre" and "post" surgery care.

However, mushroom nutrition as immunonutrition should not be used as a substitute for any medical procedure or pharmaceutical product. Mushroom nutrition should be considered as a complement to existing modalities with the objective of bolstering the immune system.

(1) *Treatment of Cancer with Mushroom Products*-Dr. Jean Monro –Archives of Environmental Health-August 2003 (Vol.58 (no.8)).

(2) Article by Professor Amin Karmali. See page 8.

(3) *The effect of aqueous extracts of MRL products on viability of HepG2 liver cancer cells*-by Cytogenex-1 July, 2003

1. Using a supplementation of CORPET on animals undergoing surgery

An animal's immune system should be stimulated four weeks prior to surgery in order to prepare the pet for the trauma associated with surgery and to protect the pet from bacterial infection during the surgery. In addition, the pet's immune system should be further bolstered up to four weeks after surgery so as to accelerate the healing process. Accordingly, supplementing with CORPET to bolster the immune system pre and post surgery is highly recommended (See Table C.).

2. Cancer related with age

After a certain, random, age bolstering the immune system of cats and dogs becomes a necessity. For certain breeds of dogs there is a very close relationship between cancer and age.

Tumours are the cause of death in over 50% of dogs aged 10 or over.

For this reason, after the age of 6 years, *Coriolus versicolor* supplementation is recommended for such breeds the Golden Retriever, German Shepherd, Boxer and Cocker Spaniel, in accordance with the respective weight, as detailed in Table 1.

Golden Retrievers, Cocker Spaniels, German Shepherds and Boxers over 6 years old

Table 1

Cats / Dogs	CORPET grams / day
< 10 kg	1.0
De 10 a 30 kg	2.0
> 30 kg	4.0

3. Palliative Care

In cases where a palliative condition has been diagnosed due to a tumour or viral infection, then a supplementation with *Coriolus versicolor* as an alternative to euthanasia is suggested. Supplementation levels are recommended below in Table 2.

Table 2

Cats / Dogs	CORPET grams / day
< 10 kg	1.0
De 10 a 30 kg	2.0
> 30 kg	4.0

4. Leucosis Feline Leukemia

In cases where the FeLV virus has been diagnosed, a supplement level with *Coriolus versicolor* of 1.0 g/day during 14 days, followed by 0.5 g/day throughout the period during which the FeLV virus can be detected is advised.

5. Using a supplement with CORPET in Pets with viral problems*

Certain viruses (such as, for example, Distemper, Hepatitis and FeLV) are linked to the pathological processes in cats and dogs. When these viruses are identified then taking a dose of CORPET is recommended in order to re-establish the immune system's natural balance, with a view to controlling its pathogenic action.

The supplementation scheme with CORPET is made up of two phases (Table 3):

1. Loading Phase – in which the product is administered in large doses for a period of 1 to 60 days. This allows for the absorption and build up of CORPET (*Coriolus vericolor*).

2. Maintenance Phase – from 6 months to 12 months, the supplementation level is 50% of the loading phase. However, if the animal is in a palliative condition, the loading phase supplementation level should be maintained according to weight.

Table 3

	Weight	1 to 60 days* Loading Phase	60 days on** Maintenance
Cats	< 10 kg	• •	•
Small Breed Dogs	10kg	• •	•
Middle Breed Dogs	10 a 30 Kg	• • • •	• •
Large Breed Dogs	> 30 kg	• • • • •	• • •
1 Bottle of Corpet - 90 tablets of 500 mg • nº of tablets			

* Supplementation is recommended under the supervision of a Veterinary Doctor.

** The maintenance phase is recommended under the supervision of a Veterinary Doctor according to the clinical evaluation of the animal.

Side Effects or Adverse Reactions of *Coriolus versicolor* -CORPET

There are no known side effects in using *Coriolus versicolor*-CORPET.

CORPET has no sugar, gluten, lactose or amide. It does not contain any dyes, preservatives, or artificial flavourings.

It is estimated that in around 2% to 5% of cases there may be some diarrhoea.

Supplementation with *Coriolus versicolor* should be suspended when antibiotics have been prescribed, however, supplementation can be resumed 14 days after the antibiotic use.

Method of administering CORPET

CORPET comes in packs of 500 mg 90 tablets that can be taken with meals.

Clinical History of *Coriolus versicolor*

A *Coriolus versicolor*, Krestin (PSK), fungus extract is used in Japan as a immunotherapy base on patients with Cancer.

Krestin (PSK) is used in cancer treatments on patients undergoing radiotherapy, chemotherapy or surgery, with the aim of improving the patient's immune system activity⁽¹⁾.

In oriental medicine, medicinal mushrooms found in nature are the most powerful protectors of the immune system and have been used for over 700 years in strengthening, reducing fatigue and promoting cardiovascular health.

In the West, studies undertaken by Hippocrates, the "father of medicine" had already referred to these mushrooms.

Studies show that extracts of *Coriolus versicolor* produce a significant increase both in antioxidant activity and in other activities that help protect cells.

The 2 proteoglycans of *Coriolus versicolor* – PSK (Polysaccharide -K) and PSP (Polysaccharide -peptid) show the greatest potential.

In experiments on humans carried out in Japan since 1970, PSK increase survival rates by over 5 years in cases of cancer of the stomach, colon-rectum, oesophagus, nasopharynx and lungs (in non small type cells) as well as in HLA B40 positive breast cancer⁽¹⁾.

Both the PSK and PSP strongly stimulate the production of immune cells, reduce the effects of chemotherapy and improve the infiltration of Dendritic cells and cytotoxic Ts in tumours.

It's extremely high tolerability, its benefits, be it in terms of survival or quality of life, as well as its compatibility with chemotherapy and radiotherapy treatments, makes it a highly recommended product in cancer treatment regimes.



Coriolus versicolor

1) *The use of Mushroom Glucans and Proteoglycans in Cancer treatment—Dr. Parris Kid (Ph. D) - Alternative Medicine Journal 2005; 5 (1) p 4-27*

For more information, please visit web site at: <http://www.mycologyresearch.com>

Mushroom nutrition applied as Immunonutrition in Cats

Research carried out on the application of **CORPET** – *Coriolus versicolor* on small animals

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Clinical Case 1: Feline Leukaemia (FeLV)

Diagnostic: In May 2001, a three (3) year old cat was taken to a clinic showing signs of tiredness, sadness, lack of appetite, weight loss and serious dehydration. In March 2001 it tested positive to the **FELV** test and negative to the **FIV** test (diagnosis carried out by the “Animalândia” Clinic – Paço D’Arcos.). The **FELV** virus is related to Feline Leukaemia and its prognosis is very reserved. It was decided to bolster the cat’s immune system with a supplementation of **CORPET** (*Coriolus versicolor*).

Supplementation with CORPET (*Coriolus versicolor*) commenced on 01 May, 2001 under the following programme:

Days 1 to 15 – 2 tablets of 500mg per day (crushed and mixed with the food)

Days 15 to 90 – 1 tablet of 500mg per day (crushed and mixed with the food)

Observation 1 – 7 July 2001

Rectal temperature 37.9° C.

There was a notable improvement in activity and appetite resulting in weight increase and greater overall dynamism.

Observation 2 – 19 August 2001

Rectal temperature 38.5° C.

The cat was in a good state of health, with greater energy and appetite. The decision was taken to continue with the supplementation of 1 tablet of 500mg per day of **CORPET** (*Coriolus versicolor*).

Observation 3 – 26 October 2001

Supplementation was halted during a 15-day period in October. The cat subsequently lost 1 kilo in weight and evidenced a notable loss in physical activity. The supplementation with **CORPET** (*Coriolus versicolor*) was resumed on a 1 tablet of 500mg per day programme.

Observation 4 – 2 January 2002

The supplementation with **CORPET** (*Coriolus versicolor*) was reduced to 1 tablet of 500mg every three (3) days and the cat remained active.

Observation 5 – August 2004

The cat continued on a supplementation with **CORPET** (*Coriolus versicolor*) of 1 tablet of 500mg every three (3) days and remained active.

Comments: The supplementation with **CORPET** (*Coriolus versicolor*) may not eliminate the FELV virus, but it does strengthen the immune system of animals with the virus. The cat continues with a supplementation of 1 tablet of 500mg per day of **CORPET** (*Coriolus versicolor*) to strengthen its immune system. This maintained a tolerable level of the FELV viral charge.

Clinical Case 2: Cat with Fibrosarcoma and infection by way of *Haemobartonella felis*

Diagnostic: In September 2002, an eight (8) year old cat was presented with severe discolouration in the abdominal area whilst also suffering from anaemia. A pathological examination brought up the possibility of fibrosarcoma. The examination discovered that the discoloured areas were made up of a large number of interrelated fusiform cells with an oval nucleus in elongated form. On the other hand, the cells evidenced an irregular form. Observation showed that the said cells were clearly in the phase of **mitosis** (replication of new cells). The observation of cytoplasm evidenced a fibrillar form and, in some cells, they occasionally contained multiple nuclei, which confirmed the existence of a fibrosarcoma. However, in order to explain the anaemia, a diagnostic test was carried out to confirm whether the cat had an infection due to a parasite known as *Haemobartonella felis*.

Supplementation with CORPET (*Coriolus versicolor*)

On 24 September 2002 the decision was taken to bolster the cat’s immune system with a supplementation of **CORPET** (*Coriolus versicolor*) for the fibrosarcoma.

Days 1 to 15 – 2 tablets of 500mg per day (crushed and mixed with the food)

Days 15 to 90 – 1 tablet of 500mg per day (crushed and mixed with the food)

Coinciding with this, and in order to treat the infection for *Haemobartonella felis*, in October 2002 the cat was prescribed a treatment of Tetracycline.

Observation 1 – On 9 November 2002 a further test demonstrated that the parasitic infection had disappeared and the fibrosarcoma became smaller. Supplementation therapy with **CORPET** (*Coriolus versicolor*) was maintained, with 1 tablet of 500mg per day as maintenance therapy.

Observation 2 – on 11 January 2003 there was still no parasitic infection and the cat now showed normal energy levels.

Observation 3 – on 5 April 2003, the cat continued with the supplementation therapy of **CORPET** (*Coriolus versicolor*) of 1 tablet of 500mg per day, still evidencing normal energy levels.

Observation 4 – on 5 May 2003, the cat continued with the supplementation therapy of **CORPET** (*Coriolus versicolor*) of 1 tablet of 500mg per day and the fibrosarcoma disappeared.

Observation 5 – On 24 July 2003, the cat continued with the supplementation therapy of **CORPET** (*Coriolus versicolor*) of 1 tablet of 500mg per day. The clinical situation referred to in observations 3 and 4 remain unaltered.

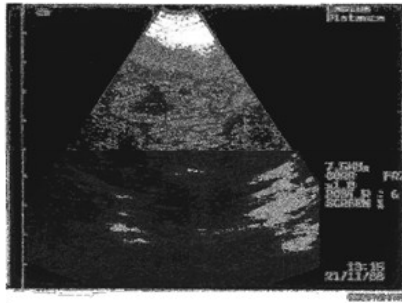
Mushroom nutrition applied as Immunonutrition in Dogs

Clinical Case 1: Irish Setter (9 years old) with a prostate tumour

Observation 1: 12 May 2005

On 12 May 2005, a nine-year-old Irish Setter called "Boss" came in for a clinical appointment. "Boss" presented dark blood, a symptom, which first manifested itself at the beginning of December 2004, and which had been progressively getting worse coupled with slight adynamia, loss of appetite and general apathy. The dog's weight was between 25 and 27 kilos. His hair was dull, broken up and there were some alopecia on the neck and chest.

After conducting a clinical examination, on 13 May 2005 it was decided to request an abdominal ultrasound from the Faculty of Veterinary Medicine in Lisbon (1) and (2) carried out by Dr. Nuno Félix. the National Laboratory of Veterinary Research was also requested to carry out coprological and dermatological exams.



Ecography 1



Ecography 2

Exam results

Bladder: Thick with irregular walls (3.4mm) presenting a small polyp approximately 5mm in diameter and evidencing some sediment. No images compatible with Lithiasis. Observation compatible with cystitis. Urine analysis recommended. Inflammatory polyp (we recommend periodic accompaniment and a new ultrasound exam after treatment of the cystitis and, if required, a biopsy).

Prostate: Hypertrophy and Hyperechogenicity (suggesting metastases). Cysts / abscesses approximately 5mm in size, surrounded by a hyperechoic region in the prostate's dorsal area (inflammation?).

Kidneys: Left: 6 x 3 cm; right 5.8 x 2.8 cm. Good cortico-medullary transition, although the renal cortex appeared to be somewhat hyperechoic (although it maintained the echogenicity relationship with the liver and spleen).

Spleen: Normal

Suprarenal Glands: Left: 8mm diameter (normal 6mm). At 8 mm it may be normal in older animals. However, this observation is only significant when combined with analyses.

Suprarenal Glands: Right: normal

Liver: Apparently small (although the best method of diagnosis is to conduct an abdominal radiography) and hyperechoic (fibrosis??, Inflammatory Infiltration??. In some cases it may be associated to infiltrations such as lymphoma, although unlikely. In these cases the liver is normal / enlarged).

Gall Bladder: with sediment and thick walls.

Stomach: normal.

Supplementation: On 14 May 2005 treatment was began with *Coriolus versicolor*, using the following prescribed amounts:

Days 1-30: 6 tablets per day (500mg tablets crushed and mixed with the food)

Days 30-90: 3 tablets per day (500mg tablets crushed and mixed with the food)

On 14 May 2005 an antibiotic (ciprofloxacin) was prescribed for treating the cystitis, using the following prescribed amounts:

First two days, 3 tablets (500mg) per day, every 8 hours.

The next five days: 2 tablets (500 mg) per day every 12 hours.

Observation 2: On 6 June 2005 (21 days after initiating supplementation). "Boss" was more energetic and had recovered his appetite. Two further abdominal ultrasounds were requested (3) and (4), this time from Parque Veterinário Institute under the auspices of Dr. José Sales Luís as it was not possible to repeat them at the Faculty of Veterinary Medicine, where the first two ultrasounds had been conducted. Results of Ultrasounds (3) and (4)

Bladder: improvement. No signs of cystitis with no thickening of the wall. No sediment. The polyp was no longer visible, possibility of organised sediment, that is appeared with the medication.

Prostate: normal (3.5 cm in diameter) with a small cyst (+/- 6mm in diameter).

Kidneys: left and right kidneys normal.

Liver: normal.

Gall Bladder: with some sediment.

Spleen: normal

Others: no mass compatible with tumours. No ascetic liquids.

Analysis of the Enzymatic content of CORPET (*Coriolus versicolor*)

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Enzymes have been used in the prevention and therapy of a number of illnesses for over a century, namely in clinical conditions involving cardiovascular, immune, digestive and respiratory systems, amongst others. As a general rule, enzymatic therapy contributes to reinforcing the following functions in the organism:

- ♦ Re-establishment of the organism's internal physiological environment, namely pH for neutral values, elimination of toxic substances, bacterial intestinal equilibrium and strengthening the immune system.
- ♦ Anti-inflammatory.
- ♦ Anti-infection.
- ♦ Purification of blood circulation.
- ♦ Revitalisation of cells by way of improving cellular metabolism.

Effectively, various works of research published in specialist international magazines have unequivocally demonstrated that enzymatic therapy is a safe and efficient alternative in treating cancer, insofar as it is possible to revert a malignant tumour to a benign state, induction of apoptosis of cancerous cells and elimination of toxins.

Proteolytic enzymes degrade cancerous cells and toxins while cellulases and beta-glucanases strengthen the immune system and provide more energy in the form of ATP.

Mushrooms are a particularly rich source of various nutrients such as enzymes, protein, Polysaccharide-proteins and secondary metabolites.

There are literally hundreds of different enzymes in mushrooms that can be used in the various processes of oxidative reduction of stress and in inhibiting cellular proliferation.

Accordingly, the content of enzymes in *Coriolus versicolor* -CORPET was determined in the presence of pepsin (pH 2, 37° C during 30 minutes) and tripsin (pH 7.6 37° C during 30 minutes) so as to simulate identical conditions to the digestive tract.

Results showed that, simulating conditions of the digestive tract, there is roughly a 10 – 20% reduction in enzymatic levels, except in the case of glucose2-oxidase, which pepsin reduced to roughly 50% of activity, whilst there was no significant effect with regards to tripsin.

Enzymatic Content in <i>Coriolus versicolor</i> CORPET* tablet (500mg)	In the absence of proteolytic enzymes	In the presence of Pepsin	In the presence of Tripsin
1. Proteins (content)	17.3 mg	15.7 mg	16.6 mg
2. Reductive sugars	14.8 mg	14.5 mg	14.1 mg
3. Proteins linked to Polysaccharides	91.5 mg	80.5 mg	82.1 mg
4. Secondary Metabolics (thrombin inhibitor)	59 %	54.2 %	52 %
5. Peroxidase activity	67.2 mU	60.4 mU	64.5 mU
6. Laccase activity	521.5 mU	511.6 mU	535.1 mU
7. Gucoamilase/beta-glucanase activity	6.9 U	-----	6.2 U
8. Protease activity	5.9 U	5.0 U	5.2 U

Note: An enzyme unit (U) is the amount of the enzyme required to catalyze the conversion of one subtract micromole in production per minute in certain experimental conditions.

Laccase – is present in an active form and catalyses the reduction of oxygen in water as well as a vast array of phenolic and xenobiotic compounds. This enzyme plays a very important role in degrading toxic compounds in the organism.

Pyranose Oxidase /Glucose 2-oxidase – catalyses the oxidation of several Monosaccharides producing hydrogen peroxide and the corresponding ketone. Several species of basidiomycetes synthesize this enzyme, which plays an important role in diagnosing diabetes as well as in the biosynthesis of antibiotics (e.g. cortalcerona) and glucid derivatives.

Peroxidases – catalyse the oxidation of a wide range of aromatic compounds present in hydrogen peroxide. These enzymes belong to a family of isoenzymes produced during the secondary metabolism of basidiomycetes and play an very important role in the detoxification of a large number of environmental pollutants, such as PCBs and dioxins.

Proteases – catalyse the degrading of proteins producing small peptides and amino acids. *Coriolus versicolor* has a significant proteolytic activity synthesising intracellular and extracellular proteases. Some of these proteases play a very important role in cardiovascular complications as they have a high level of fibrinolytic activity. (i.e. anti-clotting) and can therefore be used as a potential therapeutic agent in treating thrombosis.

Proteins linked to polysaccharides – play an important role as modifiers in the organism's biology, namely in anti-viral, and anti-cancer activity as well as in SOD mimetic activity.

Detoxification – the role of CORPET (*Coriolus versicolor*)

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Animal organisms are exposed to a wide range of toxic substances on a day to day basis, whether these be exterior (polluted environment, medication, alcohol, tobacco fumes, and emission of gases, amongst other things) or interior (degraded sub products of nutrients, hormones and bacterial degradation in the intestines). The liver is the organ responsible for extenuating the toxicity of these products through a series of complex biochemical reactions. The function of various enzymes involved in this process consists in converting these liposoluble toxic products into soluble substances in water that can then be excreted through urine.

A variety of pathological damage, such as carcinogenesis and cellular degeneration are due to the presence of reactive oxygen species (ROS) produced by sunlight, ultra-violet radiation, chemical reactions and metabolic processes. These reactive oxygen species are toxic to a cell as they responsible for the oxidation and degradation of important biological macromolecules, namely lipids and proteins.

Superoxide dismutase (SOD) catalyses the destruction of superoxide radicals that are harmful to healthy cells. Some research has shown that SOD is without doubt involved in various clinical conditions, such as Parkinson's disease, cancer and anaemia,

The cytochrome P-450 enzyme complex located in the endoplasmic reticulum of the cell plays a very important role in the metabolism and detoxification of endogenous substances in the detoxification process. However, reaction to cytochrome P450 produced free radicals that can provoke secondary damage to cells. Therefore, an adequate supply anti-oxidising substances and destroyers of free radicals is essential in order to prevent significant cellular damage, namely reduced glutathione, SOD and other anti-oxidising nutrients such as vitamin E and β -carotene.

The enzyme complex of cytochrome P-450 and SOD are synthesised by various basidiomycete class fungal strains, namely *Coriolus versicolor* and *Ganoderma lucidum*.

In this report the enzymatic content was evidenced in terms of the enzymatic complex of cytochrome P-450 and SOD involved in the processes of cellular Detoxification. Accordingly, the content of enzymes in CORPET (*Coriolus versicolor*) was determined in the presence of pepsin (pH 2, 37°C during 30 minutes) and tripsin pH 7.6 37° C during 30 minutes), so as to simulate identical conditions to the digestive tract.

Results demonstrated that, simulating the conditions of the intestinal tract, there is a 10-20% reduction in enzymatic levels.

Enzymatic Content in <i>Coriolus versicolor</i> CORPET* tablet (500mg)			
	In the absence of proteolytic enzymes	In the presence of Pepsin	In the presence of Tripsin
1. Cytochrome P-450	0.51 nmoles	0.49 nmoles	0.52 nmoles
2. Cytochrome P-450 reductase	11.9 U _m	9.52 mU	11.1 mU
3. Superoxide dismutase Activity (SOD)	77.1 U	61.2 U	68.5 U

Conclusions

Nutritional immunotherapeutic properties of mushrooms are due to the action of:

- ♦ Proteins linked to polysaccharides, which trigger immune responses responsible for enhancing anticancer activity.
- ♦ Enzymes responsible for the detoxification process of toxic substances and highly reactive free radicals.
- ♦ Enzymes involved in the degradation of xenobiotic compounds in the organism.
- ♦ Secondary metabolites involved in various biological processes.

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