



'Fibrevores'



In the wild



- **Rabbits, guinea pigs and chinchillas mainly eat grass**
 - with a few leaves, vegetable matter and occasionally bits of twig & bark
 - But this is tough stuff to eat, and to digest
 - It is high in fibre, and this needs to be digested
- **Their digestive system relies on:**
 - A very delicate balance of bacteria breaking down the fibre
 - Fibre moving through their gut at all times
- **As pets they rely on their owners** feeding them a diet that mimics what they would eat in the wild:
 - **And that is fibre!**

This means that they are **'Fibrevores'**



- **'Fibrevores' are animals that are obligatory fibre-eaters**
 - This means that they absolutely NEED to eat fibre, first and foremost
 - In a similar way, cats are obligatory meat-eaters (carnivores)
- Fibrevores are:
 - Rabbits
 - Guinea pigs
 - Chinchillas
 - (Degus)
 - (Beavers)

'Fibrevores' need **FIBRE!**



- Digestive system:
 - Perfectly developed for eating fibre
 - Relies on delicate balance of bacteria
 - Fibre moving through the gut at all times
- Digestive system without fibre fails:
 - Levels of bacteria change = diarrhoea, sticky bottom and flystrike

Fatal

- Reduced fibre = compaction or gut stasis

Fatal

Fibre



- Fibre is found particularly in plant cell walls
 - It includes pectins, hemi-cellulose, cellulose and lignin
- It can be divided into:
 - Digestible Fibre and
 - Indigestible Fibre
- Together both types are beneficial and are **essential** in rabbit nutrition
- But it is difficult to turn fibre into rabbit

'Fibrevores' are prey animals



- Grass is not rich in nutrients **but 'Fibrevores' have evolved to** be able to **digest grass and fibre** to extract all the nutrients they need
- **Cows are big animals** that also eat grass and so have developed massive stomachs (80 litres big) and **a rumination process** to digest grass and nutrients.
- 'Fibrevores' however, are **prey animals** who have many predators in the wild
 - Thus they need to be a size and build that enables them to quickly run away from predators
 - So they can't have a large stomach & digestive system like a cow
- When eating they are **looking for predators** not at what they are eating
 - Hence evolved with eyes toward top of head
 - They cannot see what they eat
 - So the look and colour of food is irrelevant to them

Let's talk about droppings!



- 'Fibrevores' need to **process their food twice** to get all the nutrients they need from it
- So 'Fibrevores' are physically unique, the food goes through them twice
- **They eat their own droppings!**
- And they should and **NEED** to do this
 - It is not the same issue as for dogs!
- Actually, 'Fibrevores' have 2 types of droppings
- **The droppings that 'Fibrevores' eat are special**
 - They are full of additional nutrients that the rabbit needs
 - Called 'sticky droppings' or caecotrophs

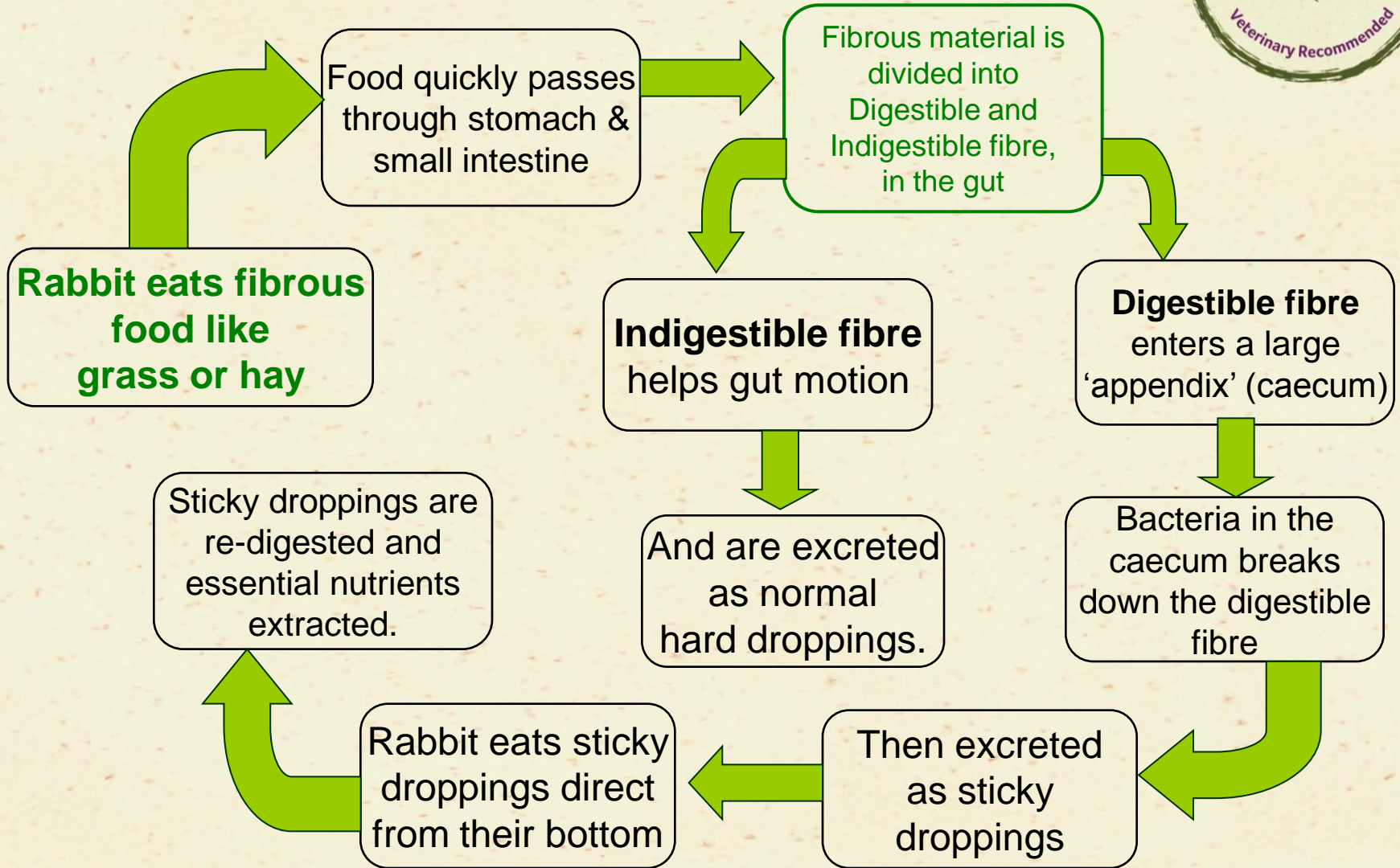
2 types of droppings



Sticky droppings
or '*caecotrophs*'

Hard droppings
Perfectly spherical = Healthy.
Tear-drop shaped = unhealthy

Rabbit Digestion



Two types of fibre



- **Indigestible fibre**

- Is needed by the rabbit to keep digestive system going
- Plays an essential part in keeping teeth ground down
- And helps stimulate appetite

- **Digestible fibre**

- Acts as the source of nutrients for the bacteria to ferment

- It is essential that 'Fibrevores' eat these fibres, as well as a balance of other foods like carbohydrates, vitamins and minerals

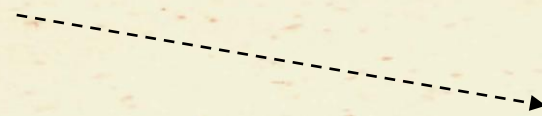
- **If they eat muesli style foods then very often this doesn't work.**

Digestible vs indigestible fibre



Digestible

Pectin

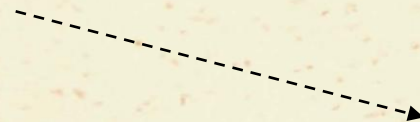


**Moves to the
caecum**

Hemicellulose



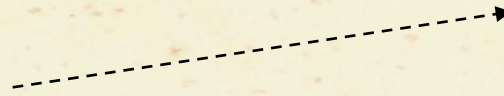
Cellulose



**Moves to the
colon**

Indigestible

Lignin



Digestible fibre



- Digestible fibre is less than 0.3 – 0.5mm in length
- It provides the substrate for the caecal microflora
- It can be broken down by microbial bacteria
 - fermented
- It assists in maintaining the optimal pH in the caecum
- Thus it helps prevent the proliferation of pathogenic bacteria
- It helps increase the fibre content of the caecotrophs, thus ensuring that they are of the correct consistency
- It is essential in fatty acid production

Digestible fibre



- Digestibility can be increased by physically reducing the size of the particle of fibre.
 - Pectin and Hemicellulose

Indigestible fibre



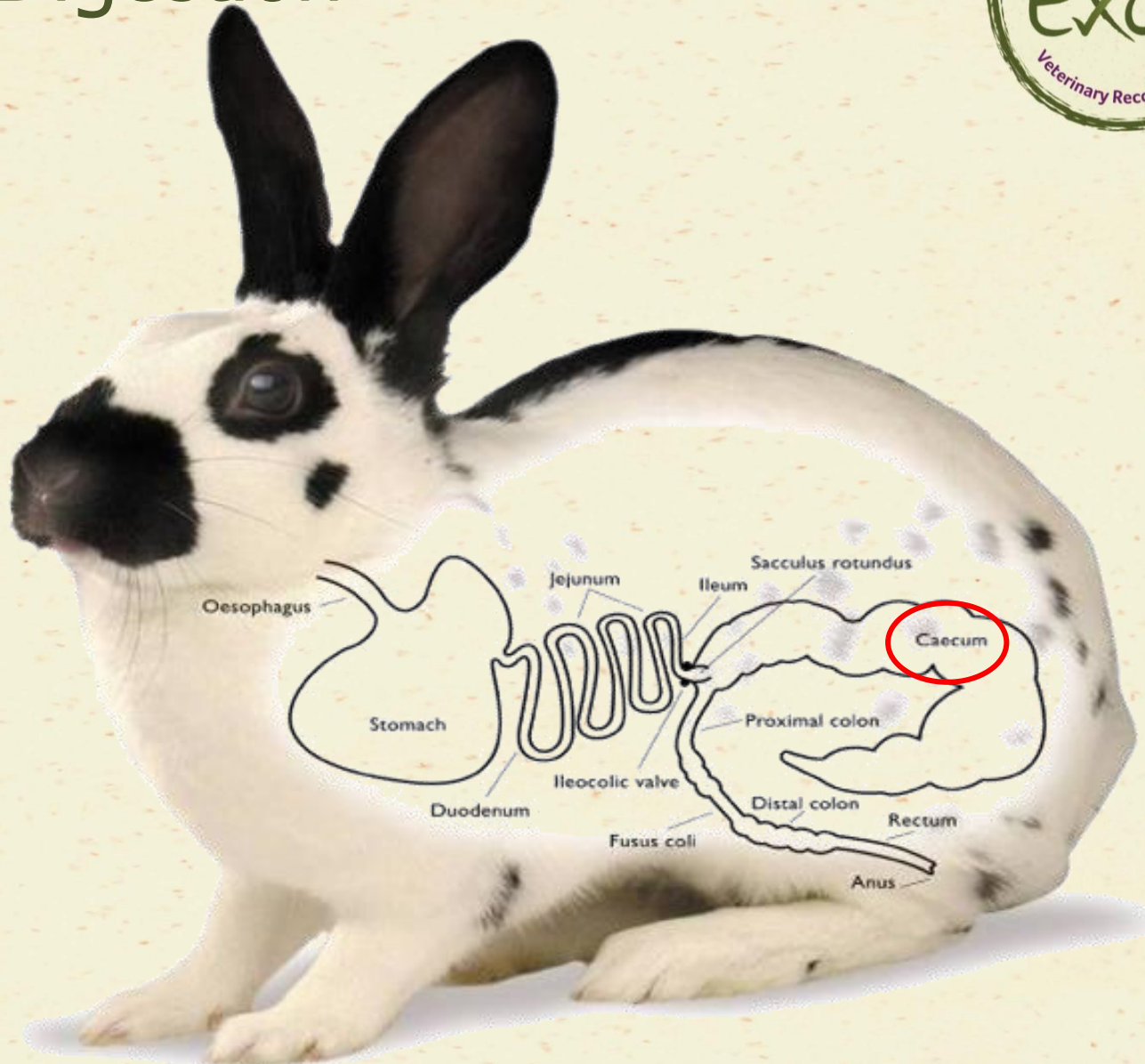
- Indigestible fibre is greater than 0.5mm in length
- It cannot be broken down by enzymes or bacteria
 - Especially lignin
- It assists in gut motility, ensuring that food and fluid moves into the caecum for fermentation
- It helps stimulate appetite and the ingestion of the caecotrophs



Fibre levels in the diet

- Too much indigestible fibre leads to malnutrition
- Too little leads to gastric immobility
- Rabbits need both digestible and indigestible fibre in their diet – at Burgess we collectively term both as **Beneficial Fibre.**

Rabbit Digestion



Oesophagus

Stomach

Duodenum

Jejunum

Ileum

Sacculus rotundus

Caecum

Proximal colon

Distal colon

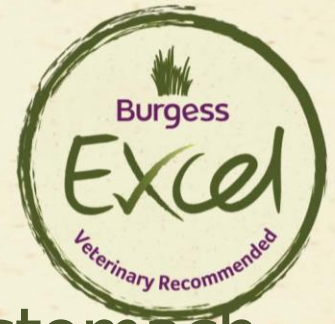
Rectum

Anus

Ileocolic valve

Fusus coli

Fibre in the digestive process



- Eaten fibre passes straight through the stomach and SI to the proximal colon
- This organ is unique in that it can separate the fibre into two fractions, and send them in different directions at the same time
- Particles smaller than 0.3 - 0.5mm are moved into the caecum (by haustral activity) for fermentation
- Particles larger than 0.5mm do not enter the caecum, but are excreted in the faeces
- There are two distinct phases of activity in the colon, that have a circadian rhythm; the **hard faeces phase** and the **soft faeces phase**

The hard faeces phase



- The formation of hard faeces occurs during the *hard faeces phase*
- Water moves into the proximal colon
- Large indigestible fibre moves to the centre of the colon, and then moves distally
- In the lower intestine the water is re-absorbed
- It is formed into hard dry pellets that are excreted
- These tend to be excreted during the day



The soft faeces phase

- Occasionally the haustral activity ceases, and the caecum itself contracts to send material swiftly through the large intestine
- In the *fusus coli*, the material is made into soft pellets
- These are encapsulated in mucus
- These are then excreted as caecotrophs, which are eaten directly from the anus

The Caecotroph



- The caecotroph contains;
 1. mucus
 2. bacteria
 3. indigestible fibre
 4. volatile fatty acids
- Caecotrophs are normally passed once or twice a day, usually about four hours after feeding.

Fibre, fibre and more fibre...



- **So simplified**
 - it all boils down to fibre
- **But no-one has told the 'Fibrevores'!!**
- And like all of us, given a chance they would rather live off the 'Fibrevores' equivalent of ice-cream and crisps



The problem with muesli-style food

1. Selective feeding

- ⌘ 'Fibrevores' can become fussy eaters
- ⌘ They will eat sweet foods, as an easy way to get a glucose fix
- ⌘ This can result in 'Fibrevores' picking out bits of their food and leaving the rest
- ⌘ Leading to an imbalanced diet, with rabbit missing out on essential nutrients, like fibre, calcium, phosphorous and Vitamin D

2. Lack of fibre

- ⌘ Muesli-style foods do not contain enough fibre but are often labelled as a 'complete' food. No one food, especially muesli can deliver the high levels of fibre that rabbits need!

3. Unhealthy ingredients

- ⌘ Often, the actual ingredients in muesli foods are high in sugar and starch
- ⌘ These are difficult for the rabbit to digest and can lead to health problems and obesity

Remember: 'Fibrevores' can't see the food they're eating, so what it looks like really doesn't matter!

The 3 benefits of fibre (Beneficial Fibre)



- **Fibre is also important for:**
 - **Digestive health**
 - **Dental health**
 - **Emotional health**

The Excel Feeding Plan



The Excel Feeding Plan = Complete Nutrition



Provides all the beneficial fibre and nutrients that 'Fibrevores' need

Burgess Excel



- Full range of products across the Excel Feeding Plan
- NEW Nature Snack products

Burgess Excel



- Full life stage range for rabbits
- NEW Mature rabbit food
- NEW food for Chinchillas
- NEW flavour variants
- NEW 750g Intro Pack