INTAKE GROWTH AND DIGESTION OF THE GROWING RABBIT FED ALFALFA HAY OR GREEN WHOLE CARROT: FIRST RESULTS

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Abstract
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Poster

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Intake Growth and Digestion of The Growing Rabbit Fed Alfalfa Hay or Green Whole Carrot: First Results

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ABSTRACT

As an herbivorous animal, it is relevant to use plants or vegetable sources in rabbit rearing, and more particularly by vegetable products non concurrent of the human feeding. However most of the data on rabbit nutrition were obtained with pelleted feeds containing dehydrated and grinded raw materials. The carrot, as whole plant, is readily available in area producing carrots for human consumption, since over the half of the carrot production is not calibrated for canning factory and is considered as wastes. We thus aimed to measure, with the direct method, the digestibility for two fibre sources, either in a dried form (alfalfa hay) or under a green form (whole carrot discarding). We also aimed to measure the performances of the rabbit: growth, health and intake capacity. A trial was conducted at the experimental farm of the Perpignan University (IUT), to assess the performances and digestion (direct method) of the growing rabbit fed hay or green vegetable source: alfalfa hay (AH) and green whole carrot (GWC). The GWC was collected every two days, in fresh form from production wastes of one farm (area of Perpignan, France). The alfalfa hay (2d cut, sun dried) was produced in the area of Perpignan (Ariège). At weaning (40d), 3 groups of 5 rabbits (crossbred line, NZW.x Cal. x PS119) were housed individually in metabolism cages, and were fed ad libitum the pelleted feeds till 49d old, as an adaptation period to the cages. Then, two groups were fed either the alfalfa hay or the GWC as a sole feed, and one group remained to be fed with the pelleted diet (control group: C). Faecal collections were achieved individually after a 7d adaptation period to the feeds and lasted 11d, from 56 to 67d old. The dry matter content of the GWC is low compared to that of AH or to pellets (C). AH and GWC are well balanced feeds in terms of fibre and protein content, and could be given as a sole feed to the rabbit to measure directly their digestibility. The intake level of the control group (C) were in agreement with classical data obtained on a commercial pelleted feed. For the GWC, and after a 7 days adaptation period, the intake capacity of the 8 weeks old rabbit was very high, since they were able to ingest more than 600g of this green fodder per day and per rabbit, corresponding to 40% of their live-weight. Even, during this period, every morning, feeders of the group GWC were alway empty; thus suggesting that the maximum threshold for the intake capacity was not reached. In contrast, the intake capacity for the alfalfa hay was relatively low (84g/d), even after a 7d adaptation period. The bulking capacity of the hay (high for the rabbit) may explain this moderate intake. Expressed as DM intake, GWC ranged before the AH, but remained 40% below the intake of a pellets. Moreover, during the adaptation period (49 to 56d old), the feed intake was probably lower for GWC and AH. However, from 56 to 67 d old were registered a positive growth for the AH and GWC groups (12 and 15 g/d resp.), while the growth of the control group was meanly of 54 g/d. The DM digestibility of GWC averaged 86%. The digestion of AH was moderate (56%) and relatively variable. In conclusion, the rabbit showed a very high intake capacity for a green fodder such the whole carrot. The intake capacity for alfalfa hay was moderate and required and adaptation period.

Key Words: Rabbit, Alfalfa Hay, Green Whole Carrot, Intake, Growth

Intake, growth and digestion of the growing rabbit fed alfalfa hay or green whole carrot: first results.

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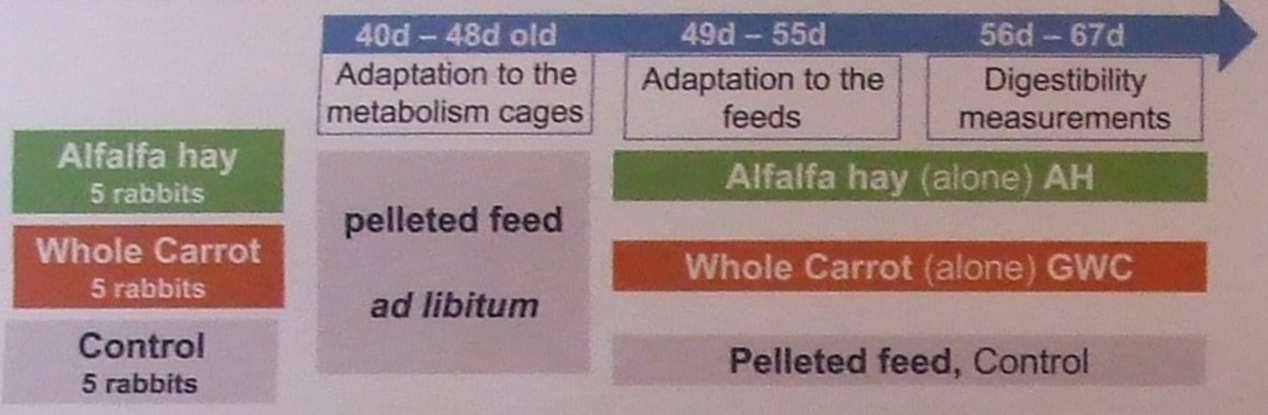
- Rabbit breeding is a pertinent alternative to use whole plants or vegetable byproducts, non competing with human food.
- However, feeding the rabbit with forages or whole plants is poorly informed, and numerous nutritive values for raw materials are missing.

Objectives

- Study the nutritive value of two raw materials: alfalfa hay and whole carrot discarding
- Measure the intake capacity and growth for rabbits fed **only** these two fibre sources.

Material and Methods



Metabolism cages

Collection of carrot discarding

The nutritive value of one forage and one green plant was assessed, with a direct method, by feeding growing rabbits with **only** a alfalfa hay (AH) **or** green whole carrot (GWC), and compared to a control group (C) fed a commercial pelleted feed.
Faecal collections were achieved individually after a 7d adaptation period and lasted 11d.

Table 1. Chemical composition of feeds

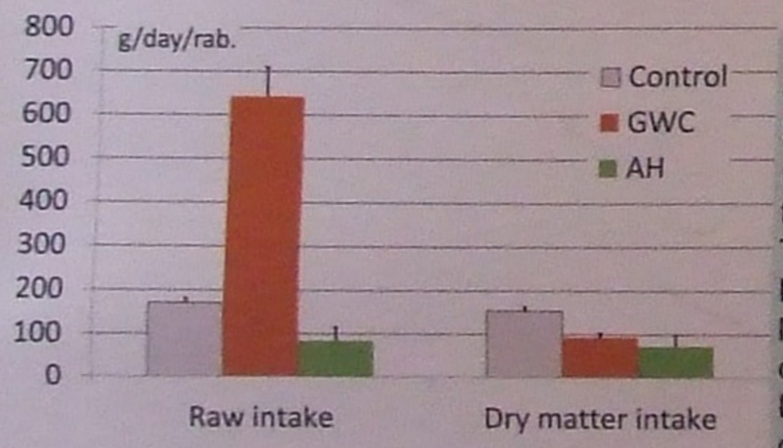
g / kg as fed	Control (C) (pellets)	Green Whole Carrot, GWC	Alfalfa Hay, AH
Dry matter	901	145	860
Crude protein*	165	21	174
Crude fibre*	153	22	272
Digestible energy MJ/kg*	9.42	1.47	7.14

*: values calculated according to the feed composition tables (Maertens *et al.*, 2002, INRA, 2004, Goby and Gidenne, 2008; http://www.feedipedia.org/node/275)

Results and discussion

Alfalfa hay and green whole carrot are well balanced respect to their fibre and protein content (table 1), and could be given as a sole feed to the rabbit.

Figure 1. Intake of rabbits from 56 to 67d old.



After 7d of adaptation, the intake capacity of 8 wks old rabbit was very high for the whole carrot : 600g/day (figure 1), corresponding to 40% of the live-weight.
The intake capacity for the **alfalfa hay** was low (84 g/d), suggesting a low appetency or/and a high bulking capacity for the rabbit.
Dry matter intake of GWC ranged over the AH, but remained 40% below the intake of a pelleted feed.

Table 2. Growth of rabbits

	Control (C) (pellets)	Green Whole Carrot, GWC	Alfalfa Hay, AH	*P level*
Weight at 49d old, g	1528±89	1556±100	1550±141	*0.92*
Weight at 67d old, g	2461±98[a]	1719±142[b]	1665±213[b]	*<0.01*
Weight gain , g/d				
From 56 to 67d old	49.1±13.9 a	-2.0±5.4 b	-7.6±8.0 b	<0.01
From 56 to 67d old	53.6±12.7 a	11.9±3.8 b	15.3±5.7 b	<0.01
From 49 to 67d old	51.8±3.7[a]	9.0±4.1[b]	6.4±5.8[b]	*<0.01*

During the adaptation period (49 to 56d), the feed intake is not sufficient to allow growth in GWC and AH groups (table 2). Then, a positive growth was observed for the AH and GWC groups.

Figure 2. Dry matter digestibility of feeds

The digestibility of the dry matter of GWC averaged 86%, and was similar to that calculated by Goby and Gidenne (2008) on the same product, but dehydrated and mixed within a complete feed. The digestion of AH was moderate (56%) and more variable (figure 2)

Goby J.P., Gidenne T., 2008. Nutritive value of carrot (whole plant), dried at low temperature, for the growing rabbit. In proceedings of the 9th World Rabbit Congress, Verona, Italy, pp. 677-681 (http://world-rabbit-science.com/WRSA-Proceedings/Congress-2008-Verona/Papers/N-Goby.pdf).

J.P. Goby

The rabbit showed a very high intake capacity for a green fodder such the whole carrot.
The intake capacity for a alfalfa hay was moderate and required and adaptation period.
These first result must be confirmed on a larger number of animals.

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