



Breeding of orphaned and suckling hedgehogs

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Introduction

The main point in the rearing of orphaned mammals is proper nutrition. When choosing a surrogate for milk, the natural composition of breast milk must be considered. We only recently got to know what the correct composition of hedgehog milk should be, thanks to research by the veterinary faculty of the University of Hanover, Germany (see table 1).

The milk of the hedgehog has a high energy and fat content. Most of the energy (approx. 70%) is provided by fat, while 30% by the proteins contained. Lactose (= milk sugar) is present only in small traces. Comparing hedgehog milk with that of different species of domestic animals, it immediately sticks out with a high content of mineral salts and microelements. During the lactation period, the fat and albumin content in hedgehog milk increase over time, while the lactose content remains constant. Choosing a compatible surrogate for hedgehog milk, it is therefore necessary not only to take into account the ratio between fats and proteins, but also and above all the lactose content.



Alex Andina

A hedgehog at birth has more or less this appearance. The hedgehog in this photo is 1-2 days old. These animals are born already with quills.

Table 1: Composition of hedgehog breast milk compared to Esbilac®/Royal Canin®.

The values of the hedgehog breast milk are extracted from "Untersuchungen zur Zusammensetzung der Igelmilch und zur Entwicklung von Igelsäuglingen" (Research on the composition and development of suckling hedgehogs) from the brochure "Kleintierpraxis, Hannover. 42, 1997, S. 647 - 658 "(Small Animal Practice, Hannover. 42, 1997, page 647 – 658).

	Hedgehog breast milk per 100 g of body weight	Esbilac® per 100g	Royal Canin® per 100g
proteins [g]	16.0 ± 3.7	4.71	
fat g]	25.5 ± 9.2	5.71	
lactose [g]	0.07 ± 0.04	2.26	

Esbilac®/Royal Canin® milk (obtainable in Switzerland through a veterinarian) have given the best results in the breeding of orphaned hedgehogs and infants. They were developed for puppy dogs. The low and remaining lactose content in these milk brands is still tolerated well in most cases. On the contrary, as can be seen from table 1, the values of proteins and fats compared with those of hedgehog are low. This shortage can be equaled by giving the hedgehog puppies a greater daily quantity, i.e. corresponding to 25% of their weight, compared with that given by the hedgehog mother of 20%.

Up to now, no protein substances are known yet, which can be added to Esbilac®/Royal Canin® in order to satisfy even the most delicate digestive system of certain hedgehogs, especially the youngest ones.

Hedgehogs bred with Esbilac®/Royal Canin® still develop normally, if they begin relatively early to get used to an independent diet. The milk replacer is then mixed with a fine purée of meat or eggs, in order to give the infant enough protein and fat.

In any case, one must avoid giving the infants hedgehogs milk surrogate for human babies or, worse still, for cows! These qualities of milk contain too much lactose, which causes severe diarrhea and flatulence, which can be fatal.

Age determination

The determination of age is more oriented to the appearance and development of the small hedgehogs, than to their weight (see table 2). The body weight of hedgehogs depends a lot on factors, which often escape the person who treats them. These factors can be the size of the litter, the state of health of the mother and the period in which the young were left without nourishment.

Table 2: determination of the age of suckling hedgehogs

age	skin color	quills	hair	eyes and ears	teeth	weight [g]
at birth	pink	white	missing	closed	missing	12 – 25
1 week	pink	some dark	missing	closed	missing	30 – 50
2 week	grey	dark	little hair	open up	missing	60 – 80
3 week	grey	dark	hair	open	grow	100 – 130
4 week	grey	dark	thick	open	complete	140 – 180

Parasites

Fleas and ticks can be removed with special tweezers, which can be purchased from the local veterinarian. Infants should not be bathed or sprayed with insecticides. Fly eggs and other insect eggs must be removed immediately by the same method before the insects hatch. If that has already happened, please consult us immediately. Small wounds caused by the larvae of these insects, however, usually heal quickly.

Housing



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Shown here is an adult hedgehog, while being weighed. If he doesn't sit still, you can put him on his back or blow on him if necessary. The ideal is an electronic scale.

A cardboard or plastic box that is twice the size of a hot water bottle or a cage with a tall tub are suitable for housing the baby hedgehogs. The hot water bottle must be covered with a double towel to prevent them from getting burned. Put some kitchen paper on top of it, to prevent the hedgehogs from dirtying the towel excessively. Then lay the little hedgehogs on them and cover them with another towel or enough kitchen paper. Make sure that the little ones cannot come into direct contact with the hot water bottle. In this way, if the box is big enough, the curls can move to the fresh part of the box, if they get too hot on the hot water bottle.

After each meal, change the kitchen paper and, if necessary, the towels and check the temperature of the hot water bottle. Hygiene is a very important thing.

Warning: if you use electric pillows, even if they are set to the tepid stage, they can easily cause a stagnation of heat causing lethal overheating for babies.

Recognition mark and weight

To be able to distinguish them, the hedgehogs must be marked on the tips of the quills with a dime-sized color, using non-poisonous paints based on acrylic or nail polish.

Each hedgehog should be weighed daily, preferably using a digital scale, possibly always at the same convenient time in the morning before cleaning and the first meal. The weight must therefore be noted on a list.

Meals

As mentioned above Esbilac®/RoyalCanin® is suitable as a surrogate for breast milk. Mix a leveled spoonful of Esbilac®/Royal Canin® with two or more spoons of fennel tea (observe the instructions for use). The indicated quantity can be multiplied by any factor, but you should not prepare more milk than the requirement of two meals. Milk must be given **lukewarm**. **Important:** once a day give a drop of vitamins of the B complex (e.g. Becotal syrup 100 ml, obtainable in pharmacies and can also be administered to children) and possibly the tip of a mineral salt knife (e.g. Canisan from Kentaur company).

If Esbilac®/Royal Canin® is not immediately available from the veterinarian, you can give unsweetened fennel tea to hedgehogs from the age of a few days (possibly no longer than a day). Slightly younger hedgehogs can be provisionally given milk for cats with low lactose (obtainable at the veterinarian, in the pet shop or perhaps in the grocery store).

To breastfeed small hedgehogs you can already use plastic syringes of 2 ml and later of 10 ml (obviously without needle). We don't use rubber teats anymore, because they turned out to be impractical, since it is rare to get the right size of the hole: either the hole is too small and the baby gets too tired in sucking or the milk flows too copiously, risking going sideways. Also, in this kind of bottle, it is difficult to tell how much the hedgehog actually ingested. Just use plastic syringes!

The nursing syringes must be carefully washed with boiling water after each meal.

During the feeding, we held the baby on the back in the left hand and held with the thumb on the belly. If the baby pushes its front paws against the thumb, this does not mean that the animal is already full. It is an instinctive movement, which is normally made towards the mother's belly, thus stimulating the production of milk.

The first meal given to the little hedgehogs should consist of fennel or chamomile tea only. This is not only due to the fact that hedgehog babies are usually dehydrated at the time of discovery, since they may have not received nourishment for quite some time, but also because the baby, due to the new and inexperienced mother, the milk can easily go sideways. If the mother's milk surrogate enters the lungs, the consequence will usually be fatal pneumonia. You must therefore be careful. The first day, give small portions to slowly accustom the baby to the new milk.



This is the correct position to hold suckling hedgehogs when they are given milk. Note the syringe on top (without needle of course) and without a rubber teat, obtainable from the vet.

Toileting

Infant hedgehogs are unable to urinate and defecate on their own. The hedgehogs mother licks the belly and genitals of the babies, thus inducing them to urinate and defecate, and at the same time collects the feces to keep the nest clean. Before and / or after each meal it is therefore necessary to massage the tummy of the little ones with a wet cotton swab (Q-tips® type). Wet it, possibly using almond oil, obtainable in pharmacies, or even simply good olive oil. The oil also has the function of protecting the baby's skin from the inflammatory and corrosive action of urine. Continue to massage until success is achieved. Often you have to be patient. If urine or feces are found in their basket, this does not mean that massaging the belly is no longer necessary, but that it is urgently needed. Massage of the belly and genitals is necessary until the little ones eat on their own from the plate. Until the hedgehogs receive the milk substitute, their feces look like small green balls stuck together.

Body care

Remains of milk or liquid food as well as urine and feces inflame the sensitive skin of babies. Dry it with paper towels or absorbent kitchen paper and apply a little almond or olive oil (do not use baby oil, because the latter often or almost always contains perfume). In any case, never use ointments or talc!

Weight gain and amount of food

Up to a weight of 90 g, the average weight gain must be **4 - 6 g per day**. This also corresponds to the weight gain found in nature, when the mother breastfeeds them. To reach this weight, babies need a quantity of milk within 24 hours, which corresponds to $\frac{1}{4}$ of their own weight. The mother does not breastfeed her babies during the night, since she herself goes off in search of food, but during the day the mother's milk is continuously available to the babies. The new human mother obviously cannot continuously give milk to her babies. Therefore, you cannot do otherwise but feed them even at night during the first 14 days of life, that is, until their eyes begin to open. This is necessary in order to be able to give the babies a sufficient quantity in small, better digestible portions. From a body weight of 90 g upwards the average weight gain must be **9 - 11 g per day**.

This third table gives guidance on the amount of food to be given to suckling hedgehogs.

body weight [g]	milliliters [ml] in 24 ore	quantity of meals		milliliters [ml] per meal	remarks
		during the day	at night		
30	8	8	2	0.8	
40	10	8	2	1.0	
50	13	8	2	1.3	
60	15	8	1	1.7	
70	18	7	1	2.3	
80	20	6	-	3.3	
90	23	6	-	3.8	including the ingested food autonomously
100	25	5	-	5.0	
110	28	5	-	5.6	

From observations made, it was possible to establish that hedgehogs raised by people starting from a weight of 90-110 g, i.e. at the age of 19 days, are able to autonomously eat a few drops of their milk substitute. From now on, before giving them the milk with the syringe, you can put them in front of a low plate full of milk. Soon it can be seen that weight gain increases from 9 - 11 g / day. After another 6 days, that is, at the age of 25 days, these hedgehogs must be able to eat autonomously from the plate (see feeding adolescents).



Alex Andina

These are hedgehogs at the beginning of their adolescence. They are fully formed and have the appearance of adults, but obviously much smaller. They now eat autonomously. This stage is reached at the age of about one month. Note the recognition brand on the back.

due to the danger of salmonellosis). At first, they mess a lot and many pieces remain on the ground, but over time and with the increase in appetite they eat those too. Constantly increase solid food, decreasing the quantity and / or concentration of milk, i.e. adding more water or even better more fennel tea. At the age of 30 days, the transition from milk to solid food for adults must be achieved. From now on, give only water as a liquid. Babies have now grown into adolescent hedgehogs.

If we started too late to accustom the little hedgehogs to autonomous eating, we could risk raising eternal sucklings.

Once the eyes have opened, it is no longer necessary to feed them at night. The last meal is then given around 11.00 pm, the first around 07.00 am. Up to now it turned always out to be a good practice to write down the quantity (in ml) of the food given, add it and compare it with the daily weight gain.

Feeding for adolescents

When the little hedgehogs begin to drink their milk from the plate autonomously, even if only partially, they can be given finely chopped meat and later simply minced meat or beaten eggs (but only fresh and lightly cooked,

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Breeding of adolescents

When hedgehogs eat autonomously then, especially with large broods, it would be advantageous to separate them into different weight groups to prevent the large ones from eating away everything to the smaller ones. In principle, distribute the necessary amount of food in several dishes, so that all the hedgehogs can draw from it.

Between 250 - 350 g the hedgehogs should be placed in an external enclosure (see chapter "external enclosure") that is not too small. Now they must learn to localize, hunt and capture their natural food (insects, worms, larvae, snails, etc.). The fact that the natural mother is missing isn't necessarily a disadvantage, because the hedgehog mother wouldn't teach her little ones, what to catch and eat anyway. It goes without saying that in the outdoor enclosure they must continue to give them the food they are used to, given that the animals that make up its diet are not present in sufficient numbers to feed them.



Alex Andina

These adolescent hedgehogs have now reached a size large enough to be released into the wild. Also note here the recognition mark on the back.

Breeding problems

Flatulence

Flatulence often indicates feeding errors or lack of toileting. Either too much food was given in one fell swoop, or an unsuitable milk replacer was given, or enough belly massaging was omitted to induce urination and defecation. In this case homeopathic medicines (ask the veterinarian) can help. You can also try a more homemade method: cook a teaspoon of cumin in half a cup of water, then use a sieve to remove the cumin. The next meals mix them in cumin tea or half cumin tea and half fennel.

Constipation

If a suckling hedgehog has problems with defecation, because it is too hard, a few drops of a good vegetable oil can often help. Homeopathic medicines are also effective.

Anus injured

An injured anus is usually the result of irritants such as urine and feces. Here too, a good and constant massage of the belly and the anus area, using almond oil, can help.

Diarrhea

It occurs especially at the beginning of breeding and is attributable to the change from mother's milk to the surrogate. Over time, however, this symptom diminishes and disappears on its own. However, the cause can also be an infection with intestinal bacteria (salmonella, colic, etc.). If possible, have the stool analyzed. Should the veterinarian prescribe antibiotics or sulfonamides, a lateral therapy would be necessary, consisting of a preparation of lactic bacilli to regulate the flora of the intestines

Internal parasites

A treatment against internal parasites is not only useless, but can also be harmful to nursing hedgehogs. With worms of the lungs (*crenosoma striatum*) the little hedgehogs can only become infested if they ate infected snails. If later the larvae of these worms were actually absorbed, after three weeks the different stages of these worms would be found in the feces. Only then can deworming be carried out. An infection on the part of the mother's feces with worms of the lungs and intestines (*capillaria aerophila* and *capillaria sp.*) is in principle possible. In this case, deworming should only take place in the presence of certain symptoms and after having performed a stool analysis. This is also true for coccidia.

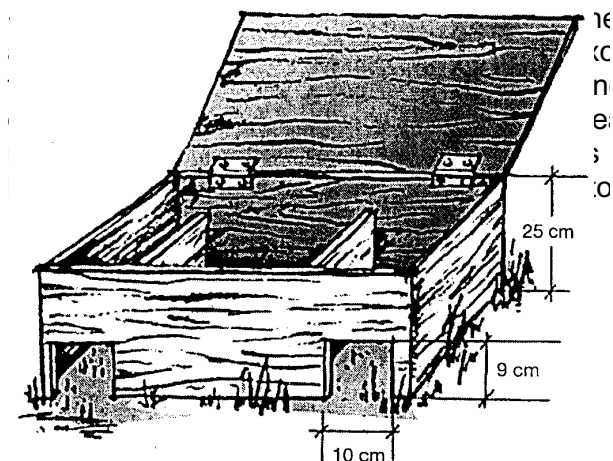
First symptoms of a paralysis

The first symptoms of paralysis are almost always the consequence of feeding errors. In most cases, they can be eliminated by giving them B-complex vitamins, one drop per day per hedgehog (available in drugstores in the form of syrup).

Release into the wild

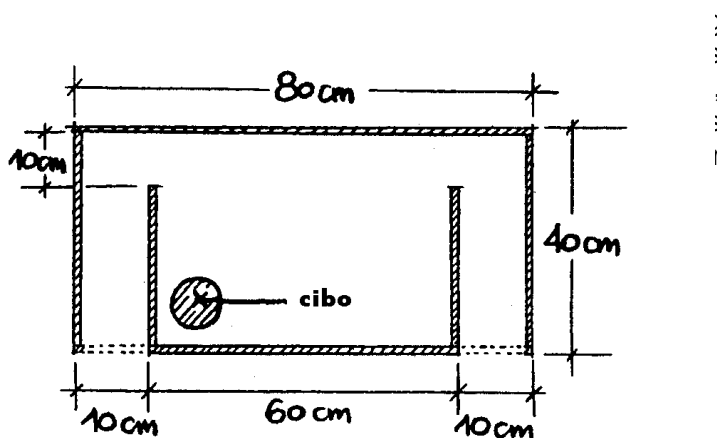
After a stay of 2 - 3 weeks in the outdoor park, if the season permits, the young hedgehogs can be released into nature.

Normally, hedgehogs must be released into the wild at the place, where they were found, especially if found weighing at least 250 g, since these animals have an excellent memory of that place. They know shelters, passages through hedge nets, places where they can find enough food, such as compost piles, vegetable gardens, etc. This is valid for hedgehogs that were already pushed out of the nest where they were born, but it is not valid for hedgehogs raised as sucklings or for such, which have not yet left the nest. The latter hedgehogs have not yet had the opportunity to get to know the environment where they were born.



Pro Riccio

Questi schizzi danno un'idea abbastanza chiara di come poter costruire una mangiatoia semplice e sicura contro le incursioni di gatti o altri animali.



In tal caso il rilascio in libertà avviene in un luogo idoneo, che non debba necessariamente essere il luogo del ritrovamento. Deve quindi essere un luogo che offre tutto il necessario ai ricci per poter sopravvivere, possibilmente dove vivono già altri ricci. Un tale luogo può anche essere il proprio giardino.

Se i giovani ricci non possono essere rilasciati, nè nel proprio giardino, nè nel luogo del ritrovamento, allora bisogna trovar loro un posto adatto. Vantaggiosi sono zone residenziali con molto verde, passaggi tra le siepi, che dividono i giardini, vecchi alberi e folti cespugli. Bisogna prestare particolare attenzione alla quantità di cibo esistente e alle possibilità di trovar rifugi.

Zone non adatte al rilascio in libertà di ricci sono i boschi di conifere o fitti boschi di sempreverdi, pendii ripidi e rocciosi, terreni agricoli a monocultura o senza nessuna coltivazione, zone da costruzione e dove vengono usati estensivamente insetticidi e vicino a strade con troppo traffico o traffico veloce.

Se possibile i giovani ricci devono essere rilasciati in libertà da un recinto o meglio da un parco esterno, nel quale vi hanno alloggiato per due o tre settimane. Essi vengono liberati semplicemente aprendo il cancello del recinto. La mangiatoia viene lasciata sul posto, rifornita di mangime ed acqua fresca per almeno due settimane. Pure il dormitorio viene lasciato dove era. Questa procedura offre ai giovani ricci la possibilità di adattarsi lentamente alla libertà e possono sempre ritornare di tanto in tanto. Se si preferisce si può presto spostare la mangiatoia e il dormitorio appena al di fuori del recinto, per poter usare quest'ultimo per altri ricci. Ricordarsi che anche adesso l'igiene è sempre una cosa molto importante.

Pensando al definitivo rilascio in libertà dei giovani ricci, conviene, secondo le possibilità, stabilire dove questo rilascio avverrà e costruire il recinto in quel posto. Dovrebbe quindi essere un posto dalle caratteristiche descritte sopra.

Se un rilascio in libertà da un recinto nella maniera descritta sopra non è possibile, perché la zona non è adatta per i ricci, e se non è possibile trovare un altro posto nelle vicinanze, allora procedere nella maniera seguente: andare a riconoscere una zona e un posto, prima di rilasciarli in libertà. Ricordarsi che viaggi in automobile e lo sbattere delle portiere rappresentano uno stress per i ricci. Sapere quindi esattamente dove e fare tutti i preparativi prima di portarli sul posto. Preparare un nido con foglie in luogo protetto sotto cespugli. In ogni caso i giovani ricci devono abituarsi già prima alla vita all'aperto in un recinto come descritto sopra.

Parco esterno

Il parco esterno (vedi disegno) deve avere un'area di almeno 6 m². Come materiale per costruirlo usare assi, paletti semirotondi in legno e ondulati in plastica. Non usare delle reti metalliche, anche se fini, perché i ricci possono arrampicarvisi. Il recinto deve avere un'altezza di almeno 60 cm e deve scendere 20 cm sotto terra. I ricci non sono dei grandi scavatori, ma riescono comunque a fare dei buchi di 10 cm di profondità. Piante o cespugli offrono la necessaria ombra al dormitorio e un foglio in plastica o simili materiali lo proteggono dalla pioggia. Stessa cosa dicasi della mangiatoia. Porre giornali sul pavimento interno del dormitorio e della mangiatoia. Questi, oltre a isolare dal freddo, rendono una pulizia più facile, in quanto vengono semplicemente gettati e posti altri. Porre inoltre paglia, foglie o semplicemente giornali stracciati all'interno del dormitorio, così che i ricci possono farsi un nido. Per proteggere il cibo dei ricci nella mangiatoia da gatti o altri animali, costruire una tale con delle entrate a labirinto (vedi disegni). Una tale mangiatoia è anche adatta per nutrire ricci rilasciati in libertà durante le stagioni povere di cibo come autunno e talvolta inverno. I ricci adulti sono degli animali solitari e territoriali, ma non lottano per il territorio. Essi si evitano semplicemente. In particolare il riccio debole evita quello forte. Di conseguenza la mangiatoia deve avere due entrate, per poter permettere ad un riccio più debole di lasciarla, allorquando uno più forte vi entra.



Pro Riccio

La foto in alto è soltanto un esempio di come possa essere allestito un parco esterno. Importante nella sua realizzazione è far in modo che i ricci non possano scappare, scavando un buco.

In basso la foto del nostro parco esterno. Ovviamente un parco non deve essere così complesso, ma forse da queste foto l'uno o l'altro dei nostri lettori ne può trarre delle idee utili per la sua realizzazione.



Alex Andina

Anche nel recinto esterno l'igiene rimane una cosa molto importante. Pulire tutte le mattine la mangiatoia e a seconda della necessità anche il dormitorio. Inoltre sempre risciacquare e possibilmente lavare i piatti con dell'acqua bollente.

L'ambiente del riccio

L'ambiente del riccio è caratterizzato da cespugli, siepi, composti, mucchi di rami, erba non troppo bassa e fogliame. Le foglie e l'erba vengono usate dal riccio per costruire il nido. Assolutamente evitare l'uso d'insetticidi ed erbicidi.

I punti pericolosi, secondo le possibilità, devono essere eliminati: chiudere i tombini, porre mattoni sulle scale di cantinati, così da facilitare la risalita, porre un asse di risalita in stagni dalle rive ripide o nelle piscine. **Attenzione** quando si taglia l'erba, specialmente con i taglia erba a filo e a lama rotante. **Attenzione** quando si sposta un mucchio di composto usando la forca. **Attenzione** quando si bruciano siepi, foglie secche o mucchi di rami: potrebbero alloggiarvi dei ricci. Provvedere a dei punti di passaggio tra le reti metalliche, che dividono i giardini. I ricci passano da giardino a giardino. I maschi, specialmente durante il periodo dell'accoppiamento, percorrono diversi chilometri ogni notte.



Francesco Maggi

Un riccio pochi giorni prima del rilascio in libertà.

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