

1 **Growth rate and behaviour in permanently separated, daily separated or non-separated**
2 **kids and the corresponding milk production of their mothers**

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8 **SUPPLEMENTARY FILE**
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10 *Supplementary explanation of how the kids were divided into different treatments*

11 If the goats delivered twins, one male and one female, the female remained with their mother
12 in DAY-SEP or NON-SEP treatment while the male was allocated to the SEP treatment. If the
13 twins were of the same gender (two female kids or two male kids), the firstborn was placed in
14 SEP treatment and the other kid remained in the same treatment as their mother (DAY-SEP or
15 NON-SEP). Unfortunately, one of the DAY-SEP goats had to be euthanized nine days after
16 parturition due to udder problems; therefore, one of the other goats in this treatment had to
17 retain both of her kids (Supplementary Table S1).

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19 **Supplementary Table S1.** Participating goats and kids in the different treatments SEP (9 ♂,
 20 1 ♀, separated from day 5), DAY-SEP (3♂, 3♀, separated daytime between 7.30 – 15:00 h),
 21 and NON-SEP (1♂, 5♀, kept with mother 24h).

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Goats	Lactation	Treatment (Goats)	Kids, nr and gender	Treatment (Kids)
1	3	DAY-SEP	1, ♂ 2, ♂	DAY-SEP SEP
2	1	NON-SEP	3, ♀ 4, ♂	NON-SEP SEP
3	1	DAY-SEP	5, ♂ 6, ♂ 7, ♂	DAY-SEP SEP SEP
4	3	NON-SEP	8, ♀ 9 ♂	NON-SEP SEP
5	2	DAY-SEP	10, ♀	DAY-SEP
6†	2	-	11, ♂ 12, ♂	SEP SEP
7	2	NON-SEP	13, ♀ 14, ♀	NON-SEP SEP
8	3	NON-SEP	15, ♀ 16, ♂	NON-SEP SEP
9	3	DAY-SEP	17, ♂ 18, ♂	DAY-SEP SEP
10	2	NON-SEP	19, ♀	NON-SEP
11*	3	DAY-SEP	20, ♀ 21, ♀	DAY-SEP DAY-SEP
12	2	NON-SEP	22, ♂	NON-SEP

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24 † euthanized nine days after parturition

25 * Stayed together with two kids and were therefore not included in statistics for milk yield
 26 and composition ♀, kept with mother 24h).

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29 *Measurements of kids behaviour*

30 Home pen behaviour was measured in all kids between 7.00 – 19.00 h at two weeks and two
31 months of age. Because birth date varied by one month, testing was performed on 3 occasions
32 for each age. Observed behaviour and their definitions are presented in Supplementary Table
33 S2

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35 **Supplementary Table S2.** Definitions of observed behaviours in kids, between 7.00 – 19.00
36 h at 2 weeks and 2 months of age.

Behaviour and position		Definition
Behaviour	Active	Standing, moving, walking, trotting, running, rearing, playing or climbing (bars)
	Passive (resting)	Lying down resting with eyes open or closed
Social position	Alone	Kid performing active or passive behavior alone
	With mother	Kid performing active or passive behavior close to mother (less than one meter)
	With other kid/goat	Kid performing active or passive behaviours close (less than one meter) to other kids or goats (ev herd members)

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39 *Milk sampling and analyses*

40 The goats were milked every day for 70 days and milk samples were collected twice daily
41 during different days (D) of lactation: D8, D12, D14, D19, D22, D29, D33, D36, D40, D50
42 and D70. The casein samples were collected on D36, D40, D70, D75.

43 The casein concentration was separated from the whey proteins by a rennet coagulation
44 method, for further explanation see the supplementary file.

45 60 µl of CaCl₂ (CaCl₂ 48% = 80g CaCl₂ + 100 ml H₂O) was added to 40 ml plastic
46 tubes (to increase the syneresis). 20 ml of fresh milk was added to the tubes and pre-
47 heated to 40^oC in a water bath. Addition of 200 µl standard rennet (Kemikalia AB,
48 Skurup, Sweden) containing 75% chymosin and 25% pepsin was added to the tubes
49 during gently stirring. The samples were set to coagulate for 5 minutes. The curd (caseins)
50 was cut into pieces and post-heated for another 5 minutes in the water bath. The curd was
51 filtrated from the whey proteins and the whey yield was measured (ml). The whey was

52 collected in 10 ml plastic tubes and one drop of a special detergent (Triton X[®]-100,
53 Merck KGaA, Darmstadt, Germany) was added to the whey samples. They were heated to
54 40°C in a water bath before the mid-infrared spectroscopy analysis. The proportion of
55 casein was finally calculated from the proportion of whey protein and the total protein
56 content due to a formula (Miris AB, Uppsala, Sweden): Fat (%) / Fat density (0.93) +
57 protein x casein- factor (0.7) /protein density (1.11) = X 100 – X / 100 = Y.

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