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INVESTIGATIONS INTO PIGLETS' FAILURE TO OBTAIN MILK AT BEHAVIOURALLY SUCCESSFUL SUCKLINGS

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Piglets suckle the sow about once every 45 min and each time milk flow only lasts for 8-41s (Ellendorff et al., 1982). Although the sow releases milk in response to the sucking stimulus during a highly stereotypic behavioural sequence, 20-25% of all attempts by the piglets to go through the typical behavioural pattern are unsuccessful as the sow does not letdown her milk (Ellendorff et al., 1982). As an added complication, even when the sow does letdown, some of the litter may fail to obtain milk as shown by a lack of increase in the concentration of galactose in the piglets' plasma (Smith and Hartmann, 1989). We investigated the possibility that the failure of certain piglets to obtain milk when they suckle was due to disruption of the piglet's pattern of behaviour.

Eleven litters (9-11 piglets/litter) were studied. Six of the litters were 10 days old and five of the litters were 5 days old. Two litters from each age group were used as controls. The control piglets were observed for an apparently successful sucking and then separated from their sow for 60 min before blood sampling began. The seven test litters were observed and recorded on video until two apparently successful sucking attempts (>30 min apart) occurred consecutively. After the second sucking attempt, the piglets were immediately separated from the sow. We then took blood samples (60μl) from the piglets' ear veins every 2-6 min over the first 45 min and then at 60, 75 and 90 min.

The plasma (20μl) was deproteinised and assayed for galactose. The concentration of galactose in the piglets' plasma was plotted and the area under the curve (AUC) over the 90 min was calculated. A value equal to 2 standard deviations above the mean for the control AUCs was used as a "cutoff" value to determine whether or not the piglets had obtained milk. The control AUC was 1.87±0.62 mM.min (mean±SD) giving a "cutoff" value of 3.10 mM.min. All except one of the 31, five-day old test piglets had AUCs higher than the "cutoff". When the video was closely examined, this unsuccessful piglet had been biting another piglet's snout during the time of milk letdown. For the 10 day-old test piglets, five out of 40 had AUCs under the "cutoff" value. One of these piglets came from a litter of nine and when the video was checked, the piglet was sucking on a underside teat and could not be observed clearly. The other four unsuccessful piglets came from a single litter of 10 and when their video was examined, at least three of them behaved identically to their litttermates. The fourth piglet was on an underside teat and was difficult to observe clearly. There was no statistical differences in body weight, sex or teat preference between the piglets with AUCs higher than the "cutoff" and those with AUCs below the "cutoff".

These results indicate that sometimes there is a behavioural explaination for the failure of a piglet to get milk at a particular sucking attempt, but often there is no apparent behavioural problem. They also indicate that individual piglets may obtain less milk than previously predicted from behavioural studies. However, the fact that there was no difference in body weight between those piglets that did and those that did not get milk indicates that the piglet's failure to obtain milk at a particular sucking attempt is not a consistent feature of that piglet's sucking behaviour.

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