

## *Pityrosporum ovale* Culture from the Forehead of Healthy Children

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One hundred and thirty-eight children aged between 2 months and 15 years were investigated to determine the prevalence and quantity of the yeast *Pityrosporum ovale*. Samples were taken from the forehead and cultured on a medium containing cow's milk, glycerol, glycerol monostearate and Tween 60 as the lipid source. Eighty-seven per cent of all children were positive in the qualitative culture. The largest number of colonies of *P. ovale* was found among children aged 2–23 months and among children older than 9 years.

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*Pityrosporum ovale* belongs to the normal cutaneous flora in adults (1–3). In pityriasis versicolor, the yeast changes from saprophyte to pathogen under predisposing factors (4, 5). The favourable response to antifungal therapy in seborrhoeic dermatitis (6) and atopic dermatitis in the head and neck area (7) may indicate a role of *P. ovale* in the pathogenesis of these conditions. In healthy children, the carrier rates of *P. ovale* are less clear. In earlier studies, *P. ovale* cultures have been positive in low percentages of healthy children, but in pre-puberty and puberty the recovery rate increases (8, 9). However, Ruiz-Maldonado et al. (10) and Leeming et al. (11) have found *P. ovale* even in very young children. *P. ovale* can act as a pathogen in children and has been recovered from neonates with catheter-related infections (12), and pityriasis versicolor has also been reported in children (13). The role of *P. ovale* as a pathogen in infantile seborrhoeic dermatitis is still unclear (10, 14, 15). *P. ovale* requires lipid in the culture medium for optimal growth, and various media have been used and described (16–18). The aim of this study was to determine the incidence and quantity of *P. ovale* in healthy children of different ages. A culture medium with cow's milk as the lipid source was used. As earlier studies have shown, this gives reliable and high recovery rates of *P. ovale*.

### MATERIALS AND METHODS

#### Volunteers

One hundred and thirty-eight healthy children, 59 boys and 79 girls aged between 2 months and 15 years, took part in the study. All children were sampled provided that parental permission had been obtained. The cultures were performed during the months of October and November.

#### Sampling procedure

Samples were taken from the forehead using contact plates (*P. ovale* Maxiplate, Max Lab Diagnostic HB, Källered, Sweden) (18). This contact plate contains peptone, ox bile, bacto agar, glucose and yeast extract. Lipid supplements were glycerol, glycerol monostearate, Tween 60 and cow's milk. Antimicrobial supplements were chloramphenicol

and cycloheximide. The contact plate was pressed against the forehead skin for 15 s, incubated in a plastic bag at 37°C and read after 6 days.

### RESULTS

In the whole group of children, 119 children (87%) had positive cultures. In the age groups 4–5 and 6–7, 73 and 76%, respectively, had positive cultures. In the other age groups, 80–95% had positive cultures. The age distribution and the results of the quantitative cultures are shown in Fig. 1. The largest number of *P. ovale* was found among children aged 2–23 months and among children older than 9 years, where more than half of the children had more than 20 colonies/contact plate. The majority of children between 2 and 7 years had 10 colonies/contact plate or fewer.

### DISCUSSION

Published reports about *P. ovale* colonisation in children are difficult to compare, due to the use of different age groups, different skin areas from which cultures are taken and different culture media (Table I). In this study we used a culture medium with milk as the main lipid source, shown in previous studies to be more sensitive than culture media using olive oil, glycerol monostearate, ox bile and glycerol (16–18). The forehead was used as the target area since the density of *P. ovale* is high on the scalp (19) and a flat area is optimal for contact plates. We found positive cultures in 87% of the healthy children included. In all age groups, the majority of children had positive cultures, although positive cultures were most often found among infants aged 1 year or younger and children older than 7 years. Quantitative cultures showed high numbers of *P. ovale* especially among children aged 2–23 months and among children older than 9 years.

Faergemann & Fredriksson (8) cultured *P. ovale* from the

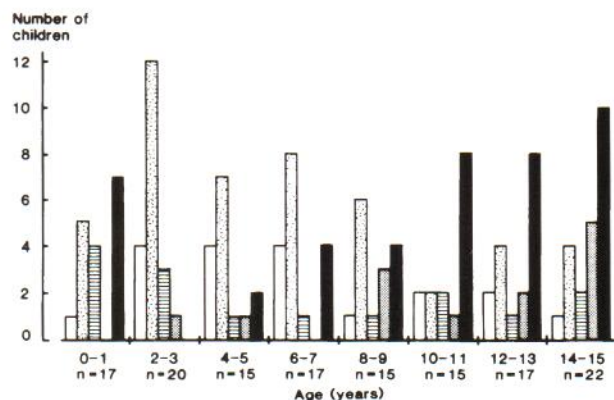


Fig. 1. *Pityrosporum ovale* in healthy children, quantitative cultures. Number of colonies/contact plate: □ 0, ▨ 1–10, ▩ 11–20, ▤ 21–50, ■ > 50

Table I. Publications on *P. ovale* cultures among healthy children

Author(s) (Reference)	Age years	No.	Results % positive culture	Target area	Main lipid source
Noble & Midgley (9)	7-11	285	63	Scalp	Glycerol monostearate
	12-16	304	84	"	Ox bile Tween 40
Faergemann & Fredriksson (8)	Newborn	25	0	Back	Glycerol monostearate
	6 months	30	0	"	Olive oil
	1	30	0	"	Tween 80
	5	30	10	"	
	10	30	23		
Broberg & Faergemann (14)	15	30	93		
	0-3 m	20	20	Forehead temporal area	Glycerol monostearate Olive oil Tween 80
Broberg et al. (20)	1-5	10	0	Forehead	Glycerol monostearate
	6-10	10	10	"	Olive oil Tween 80

backs of children with normal-looking skin and found *P. ovale* only in children aged 5 years or older. Leeming et al. (11) cultured *P. ovale* from different body sites in different age groups and found high counts in the ears from birth until about 1 month of age. Scalp cultures were often positive from 6 years of age while, on the other hand, cultures from the back were with few exceptions negative before puberty. Ruiz-Maldonado et al. (10) found *P. ovale* in cultures or smears in 50% of healthy children aged 1-24 months. The high recovery rates in our study of *P. ovale*, compared with earlier reports, are probably due to the target area used and the lipid source in the culture media.

In conclusion, we found a high prevalence of *P. ovale* in all age groups. Quantitative cultures showed the highest numbers of *P. ovale* among infants less than 1 year and among children in pre-puberty and puberty.

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