FACTOR XIIIB (FXIIIB) IN DISPUTED PATERNITY
COMPLETE ANALYSIS OF A FAMILY WITH THE RARE PHENOTYPES 4-1 AND 4-2

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SUMMARY

Paternity testing was performed on a family of five persons (mother, three children and putative father); 28 blood group systems have been tested.
While typing FXIIIB, the rare phenotypes 4-1 and 4-2 were found in three members of the family.
The paternity probability was calculated with and without FXIIIB frequency.

FXIIIB DETERMINATION

The factor XIIIB phenotyping is carried out by isoelectric focusing on thin-layer agarose gel, with pH gradient from 4 to 7 and subsequent immunofixation.
The method of LEIFHEIT and collaborators is used with several modifications.

Sample preparation and agarose gel composition

The sera are pretreated with neuraminidase Typ VIII (SIGMA). The agarose gel has the following composition : 0.20 g Agarose IEF (PHARMACIA), 0.12 g ACES, 2.00 g D-Sorbitol, 18.5 ml bidist. water, 750 µl Ampholine pH 4.0-6.5 and 750 µl Ampholine pH 5.0-7.0 (LKB).

Isoelectric focusing

Cathodic solution : 0.25 M NaOH; anodic solution : 0.25 M CH_3COOH; the temperature is maintained at 8°C during the IEF.

A prefocalisation is carried out during 30 minutes at 1200 V, 50 mA, 8 W.
8-10 µl of pretreated serum samples are applied on the gel, 1 cm from the cathodal site.
For salt removal, IEF is first conducted at 150 V, 50 mA, 8 W for 30 minutes, then pursued at 1200 V, 50 mA, 8 W for 165 minutes.

Immunofixation

Immunofixation is performed by applying 0.75 ml of 1:2 with bidistilled water diluted FXIIIB antiserum (BEHRING). The gel is left for incubation at 37°C for 90 minutes, then treated with NaCl, washed, stained (Coomassie Blue) and destained as usual.

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FXIIIB RESULTS

MOTHER	2-1
CHILD 1	4-1
CHILD 2	2-1
CHILD 3	4-2
P.FATHER	4-2

CALCULATION OF THE PATERNITY PROBABILITY PERCENTAGE

	without FXIIIB frequency	with FXIIIB frequency
CHILD 1	99.87 %	99.999 %
CHILD 2	99.99 %	99.993 %
CHILD 3	99.81 %	99.998 %