Faecal elastase 1: A marker of exocrine pancreatic insufficiency in cystic fibrosis

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Pancreatic elastase 1 (E1) is a digestive protease synthesised by the acinar cells of the pancreas. E1 is stable during intestinal transit and ist concentration reflects the secretory capacity of the pancreas.

Using an ELISA method (ScheBo ® • Tech) we have evaluated stool E1 levels in specimens submitted for occult blood examination from 17 patients each over 3 consecutive days, following assessment of inter-day variability in E1 excretion. The average age of the group was 57 years (range 5-80 years).

Levels of E1 were categorised as normal (>200 µg/ E1/g stool), moderate exocrine pancreatic insufficiency (100-200 µg/g stool) and severe pancreatic insufficiency (< 100 µg/g E1 stool).

The mean E1 concentration over all samples was 498 µg/g stool (range 120-876, SD 376). The intra-assay variation was 6.4% (n=14) and inter-assay variation was 8.8% (n=12). The mean individual patient variation was 17 % for 17 triplicates.

We have measured E1 concentration in 13 Cystic fibrosis patients, average 11 years (range 2-18 years). Of these 7 were judged pancreatic sufficient on clinical grounds. The average E1 concentration was 778 µg/g stool (range 437-1119, SD 341), 6 were pancreatic insufficient (5 homozygotes df508 and 1 heterozygote for df508 + 1 unidentified genotype). All were on replacement therapy and had undetectable levels of E1.

Our aim, long term, is to monitor pancretic sufficient CF subjects to evaluate when they may need replacement therapy or discontinue therapy if currently treated.

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