product codes:
RPN 8510, RPN 8511

Nucleon PhytoPure

DNA from plant tissue

Nucleon™ PhytoPure™ system can produce excellent yields of high quality DNA in a fraction of the time taken by conventional methods. Not only is it more efficient but it is considerably simpler. Nucleon Phytopure is:

- Novel: utilizes a revolutionary proprietary resin incorporating borate chemistries to ensure polysaccharide-free DNA preparations
- Fast: enables extraction of DNA in less than 1 hour
- Safe: eliminates the need to use phenol
- Simple: easy-to-use protocol requires only one centrifugation step prior to DNA precipitation
- Pure: DNA is of high quality and suitable for RFLP, RAPD and AFLP analyses

Polysaccharides are common contaminants in plant DNA extracts and can inhibit further enzymatic analysis of DNA. Nucleon PhytoPure DNA extraction system has been developed specifically to solve this problem.

After breaking of the cell wall, the cells are lysed in reagents containing potassium SDS which is known to complex with proteins and polysaccharides. Chloroform is added along with the Nucleon PhytoPure proprietary resin (Fig 1).

This resin contains free boric acid ($B(OH)_2$) groups which covalently bind polysaccharides (Fig 2), thus removing them from the sample. The resin forms a semi-solid stratum during partitioning with chloroform facilitating DNA recovery, ensuring good recovery of high quality DNA (Fig 3).

Nucleon PhytoPure has been used successfully on a wide range of plant species (Table 1). DNA can be extracted from fresh, frozen or freeze dried material. The kit is available in two sizes and the protocols can accommodate large and small sample preparations.

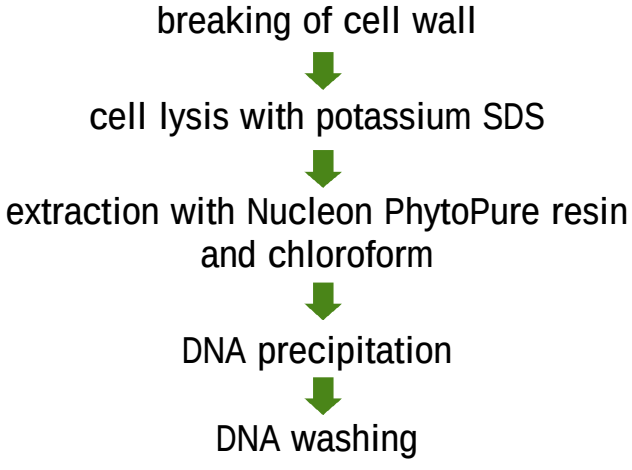

Fig 1. Principle steps in the Nucleon Phytopure protocol

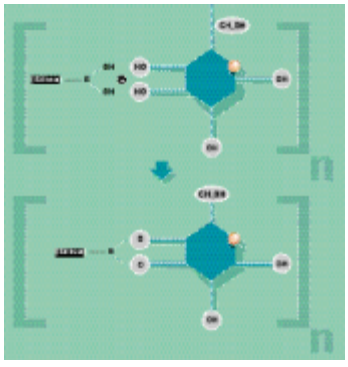

Fig 2. Polysaccharide binding mechanism

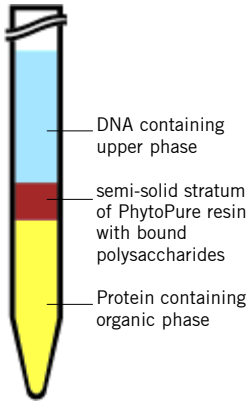

Fig 3. Formation of semi-solid stratum after addition of PhytoPure resin and chloroform

Arabidopsis	*Brassica oleracea*	*Brassica napus*	*Capsicum annuum*
Capsicum frutescens	*Cereals (barley, maize, rye, wheat)*	*Cocos nucifera*	*Helianthus annus*
Helianthus tuberosus	*Hevea braziliensis*	*Irvingia gabonensis*	*Lotus japonicus*
Lycopersicon esculentum	*Musa spp*	*Malus spp*	*Nicotiana*
Phaseolus vulgaris	*Pinus sylvestris*	*Pisum sativum*	*Rhododendron spp*
Salix spp	*Solanum tuberosum*	*Swietenia macrophylla*	*Sphagnum, bog moss*

Table 1. Plant species from which DNA has been successfully extracted using PhytoPure

Amersham Biosciences

Research carried out at IARC - Long Ashton, UK compared Nucleon PhytoPure against a standard SDS/phenol extraction method using fresh leaf material from four plant species (willow, maize, rye and rhododendron). The DNA extracted was of sufficiently high purity to use in restriction digests, RAPD analysis (Fig 4) and AFLP analysis (Fig 5). High quality DNA was recovered without phenol and in less than half the time taken by the conventional method.

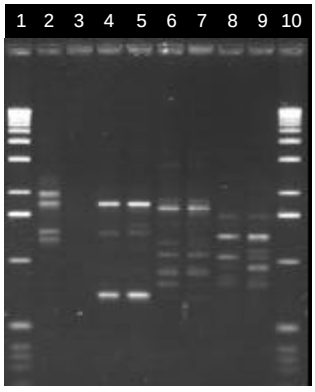

Fig 4. RAPD analysis of 4 species using operon primer OPA 10. DNA diluted to approx. 25 ng per track and run on a 1.2% agarose in TBE.

Tracks 1 & 10: 1kb ladder
Track 2: willow DNA extracted by Nucleon PhytoPure
Track 3: willow DNA extracted by SDS/phenol
Track 4: maize DNA extracted by Nucleon PhytoPure
Track 5: maize DNA extracted by SDS/phenol
Track 6: rye DNA extracted by Nucleon PhytoPure
Track 7: rye DNA extracted by SDS/phenol
Track 8: rhododendron DNA extracted by Nucleon PhytoPure
Track 9: rhododendron DNA extracted by SDS/phenol

Note the failure of the amplification reactions with willow DNA extracted by the SDS/phenol method.

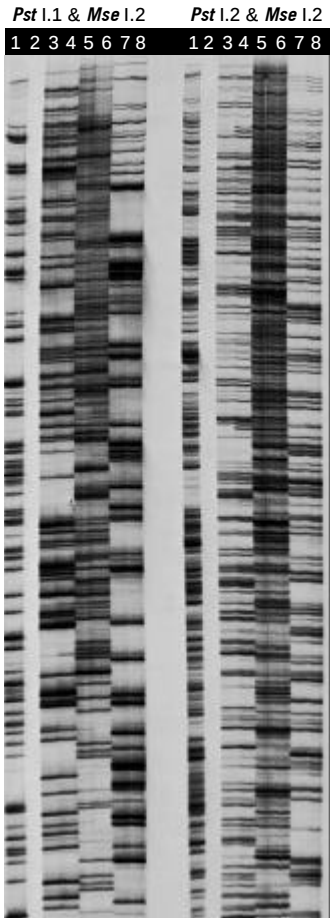

Fig 5. AFLP analysis of DNA from four plant species using two primer sets.

First primer set:
Pst I.1 & *Mse* I.2
Second primer set:
Pst I.2 & *Mse* I.2

Track 1: willow DNA extracted by Nucleon PhytoPure
Track 2: willow DNA extracted by SDS/phenol
Track 3: maize DNA extracted by Nucleon PhytoPure
Track 4: maize DNA extracted by SDS/phenol
Track 5: rye DNA extracted by Nucleon PhytoPure
Track 6: rye DNA extracted by SDS/phenol
Track 7: rhododendron DNA extracted by Nucleon PhytoPure
Track 8: rhododendron DNA extracted by SDS/phenol

AFLP's run on a 6% acrylamide gel. *Mse* I.2 primer was labelled with ^{33}P.

Note the complete failure of the AFLP analysis in track 2 when SDS/phenol was used to extract the DNA

Ordering Information

Nucleon PhytoPure for plant DNA extraction 50 preparations of 0.1 g	RPN 8510
Nucleon PhytoPure for plant DNA extraction 50 preparations of 1.0 g	RPN 8511
Kits also available :	
Nucleon MiY for yeast mini preps DNA extraction 75 preparations	RPN 8518
Nucleon HT for hard tissue & paraffin sections 50 preps of up to 25 mg per prep	RPN 8509
Nucleon BACC1 for 50 preps of 1ml whole blood or cultured cells (1 x 10^6 to 3 x 10^6)	RPN 8501
Nucleon BACC2 for 50 preps of 10 ml whole blood or cultured cells (3 x 10^6 to 1 x 10^7) or 100 preps of 1 ml whole blood and cultured cells (1 x 10^6 to 3 x 10^6)	RPN 8502
Nucleon BACC3 for 50 preps of 10 ml whole blood *(This kit contains all reagents necessary for 50 x 10 ml blood extractions)*	RPN 8512

Product information

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