

High throughput automated Magnetic bead Blood DNA extraction

Introduction

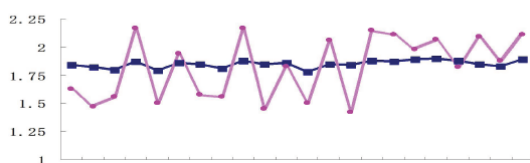
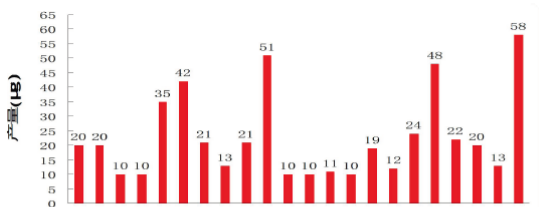
[MagPure Blood DNA Kit](#) from Magen is specifically designed for high-throughput blood DNA extraction. This product adopts improved silica magnetic bead purification technology to extract high-purity DNA from anticoagulant blood with high throughput. It has been widely used in automated nucleic acid extractors such as KingFisher Flex and automated pipetting workstations such as Versa1000 and Beckmex.

To further validate the performance of the product, we selected blood samples and extracted DNA using KingFisher Flex. After extraction, the OD values were measured using Nanodrop 2000 and the products were analyzed using electrophoresis and PCR methods. The results showed that the nucleic acid purified by MagPure Blood DNA Kit can meet various molecular biology applications. Processing 96 samples on KingFisher Flex only takes 40 minutes, greatly improving extraction efficiency and stability.

Experimental result

1. Purity of DNA

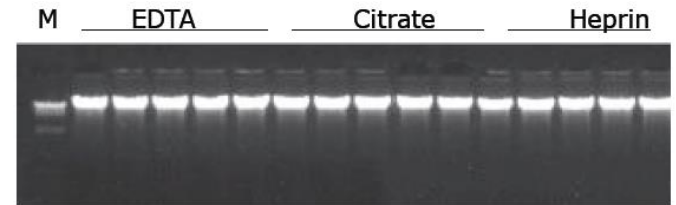
Take 200 μ l human blood DNA (8000 samples) and extract using MagPure Blood DNA Kit and KingFisher Flex. After extraction, select 22 samples and measure by Nanodrap 2000. According to the data, the DNA production of 200 μ l human blood is about 10-58 μ g (some of which are Buffy Coat samples), the OD260/OD280=1.81-1.92 and OD260/OD230=1.5-2.5.



2. Extract DNA from human blood with different anticoagulants

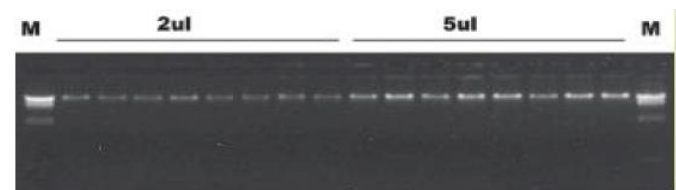
Take 200 μ l human blood with different anticoagulants, extract

DNA using the MagPure Blood DNA Kit. After extraction, 5% of the purified DNA was analyzed by 0.8% agarose gel electrophoresis. The results indicate that the DNA fragments obtained by this method are complete and this method can achieve ideal results in treating blood with different anticoagulants.



3. Trace blood DNA extraction

Take 2 μ l and 5 μ l human anticoagulant blood, diluted to 200 μ l, after extraction with MagPure Blood DNA Kit, 50% of the purified DNA was taken and analyzed by 0.8% agarose gel electrophoresis. The results indicate that this method can efficiently extract genomic DNA and efficiently recover DNA in trace amounts of samples.



4. PCR validation results

The results of PCR amplification of 400bp DNA fragments from oral swab DNA, dried blood spot DNA, and blood DNA with different anticoagulants are as follows. The results indicate that the DNA obtained using MagPure Blood DNA Kit can be directly used for PCR.

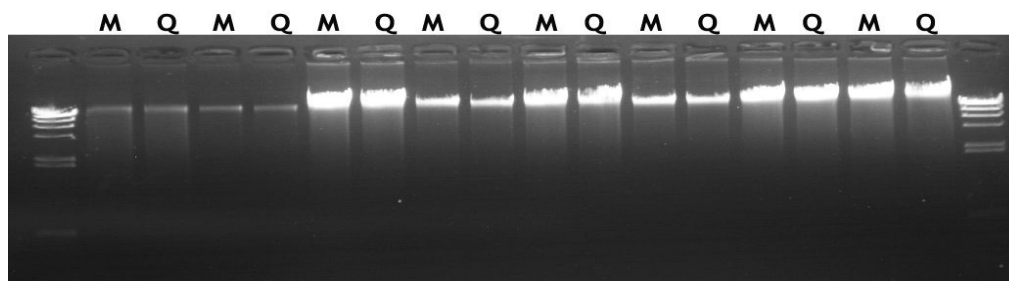


5. Extraction time on workstations

Name	Features	Required Time
KingFisher Flex	96 well	40 minutes
Versa 1000	8 channel	90 minutes
Beckmex 2000	8 channel	90 minutes
Manual	Use 96 hole vortex instrument	30 minutes

Sample ID	样品体积	Samples	Nucleic Acid Conc.	Unit	A260	A280	260/280	Yield
Magen		1	19.8	ng/ μ l	0.395	0.217	1.82	2.0
Qiagen			19.3	ng/ μ l	0.386	0.216	1.79	1.9
Magen		2	20.9	ng/ μ l	0.417	0.228	1.83	2.1
Qiagen			19.9	ng/ μ l	0.398	0.222	1.79	2.0
Magen		3	94.7	ng/ μ l	1.894	1.049	1.81	9.5
Qiagen			81.9	ng/ μ l	1.637	0.915	1.79	8.2
Magen		4	31.6	ng/ μ l	0.632	0.348	1.82	3.2
Qiagen	200ul		30.6	ng/ μ l	0.612	0.327	1.87	3.1
Magen	人体抗凝全血	5	48.7	ng/ μ l	0.974	0.540	1.81	4.9
Qiagen			48.5	ng/ μ l	0.969	0.544	1.78	4.8
Magen		6	34.9	ng/ μ l	0.697	0.384	1.81	3.5
Qiagen			31.3	ng/ μ l	0.626	0.347	1.80	3.1
Magen		7	55.2	ng/ μ l	1.104	0.607	1.82	5.5
Qiagen			54.7	ng/ μ l	1.093	0.604	1.81	5.5
Magen		8	62.7	ng/ μ l	1.254	0.689	1.82	6.3
Qiagen			59.7	ng/ μ l	1.193	0.659	1.81	6.0

Human Blood



Sample	样品类型	Nucleic Acid Conc.	Unit	A260	A280	260/280	Yield
1		59.75	ng/ μ l	1.195	0.657	1.82	7.17
2		62.25	ng/ μ l	1.245	0.697	1.79	7.47
3		64.30	ng/ μ l	1.286	0.702	1.83	7.72
4		63.60	ng/ μ l	1.272	0.709	1.79	7.63
5		29.70	ng/ μ l	0.594	0.329	1.81	3.56
6		31.85	ng/ μ l	0.637	0.356	1.79	3.82
7		31.60	ng/ μ l	0.632	0.348	1.82	3.79
8	200ul	30.60	ng/ μ l	0.612	0.327	1.87	3.67
9	人体抗凝全血	28.70	ng/ μ l	0.574	0.318	1.81	3.44
10		38.45	ng/ μ l	0.769	0.432	1.78	4.61
11		19.85	ng/ μ l	0.397	0.219	1.81	2.38
12		21.80	ng/ μ l	0.436	0.242	1.80	2.62
13		25.20	ng/ μ l	0.504	0.277	1.82	3.02
14		34.65	ng/ μ l	0.693	0.383	1.81	4.16
15		34.15	ng/ μ l	0.683	0.372	1.84	4.10

