

# SNP rs1834306 on microRNA-100 is associated with better prognostic in prostate cancer



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## INTRODUCTION

Prostate cancer (PCa) is the most common non-cutaneous tumor in the male population. In Brazil, according to the National Cancer Institute (INCA), approximately 65,840 new cases of this tumor are estimated in 2020, being the second most common type among men. MicroRNAs (miRs) interfere with the main cellular functions with properties closely linked to oncogenesis, and can act as protective miRs or as oncomiRs in cancer, including prostate cancer. Single Nucleotide Polymorphisms (SNPs) are characterized by a single nitrogenous base exchange in DNA, occurring in coding and noncoding regions. Considering that genetic factors are related to the appearance and evolution of PCa, it is believed that the identification of polymorphisms in miRs involved in PCa and the impact of these variations on the different stages of carcinogenesis of this tumor, could allow the development of markers for diagnosis and prognosis tumor.

## OBJECTIVES

To evaluate the role of the rs1834306 polymorphism located in miR-100 in the development and prognostic of PCa. In addition, correlate genotyping with classical PCa prognostic factors and with clinical data.

## METHODOLOGY

The study consisted of whole blood samples from 100 patients diagnosed with PCa and the control group by 68 healthy individuals. The genotyping of the polymorphism selected for analysis was evaluated using the quantitative polymerase chain reaction technique in real time (qRT-PCR) and correlated with preoperative PSA, Gleason histological grading, pathological staging and biochemical recurrence.

## RESULTS

The rs1834306 polymorphism (miR-100) was identified in 70.6% and 75% in patients in the PCa and control groups, respectively. When analyzing patients according to the PCa prognostic factors, we found that this SNP had a lower frequency in the group of patients with PSA > 10ng / ml, both when considering the polymorphic homozygous genotype and when considering only the presence of the polymorphic allele ( $p = 0,03$  and  $p = 0.09$ , respectively) (Table 1).

Table 1. Distribution of polymorphism and allele genotypes in relation to the preoperative PSA level.

Alteração (ensaio)	Genótipo do Polimorfismo	PSA		Odds Ratio	p
		<10ng/ml (n)	≥10ng/ml (n)		
rs 1834306 (miR100)	AA*	25,4%(18)	61,5%(8)	1	0,03
	AG	47,9%(34)	30,8%(4)	0,26 [0,07 – 1,10]	
	GG	26,8%(19)	7,7%(1)	0,12 [0,01 – 1,04]	
	Genótipo do Alelo				
	A**	25,4%(18)	61,5%(8)	1	0,01
	G	74,6%(53)	38,5%(5)	0,21 [0,06 – 0,73]	

\*Genótipo homocigoto selvagem

\*\*Alelo selvagem

## CONCLUSIONS

With our data we conclude that the presence of SNP rs1834306 in miR100 acts as a polymorphism related to the most favorable prognostic in prostate cancer.