Table of contents:

1.	Introduction	1				
2.	Aim of the work and methods of research	4				
3.	3. Background information on DR-TB and global efforts					
	to limit the problem	5				
4.	4. Epidemiology of DR-TB					
	• Definitions	18				
	MDR-TB incidence, prevalence and mortality	20				
	• Factors favoring development of resistance	32				
	Clinical significance of primary and acquired resistance	37				
	• Identification of drug resistance mutations in TB	40				
	• Development of diagnostic tests for drug resistance	42				
	• Geographical distribution and surveillance of mutations	44				
	• Drug discovery	46				
	 Data base for drug resistant mutations 	47				
	• Epidemiologic importance of available treatments	50				
5.	Mechanisms of drug resistance					
	Overview of mechanism of drug resistance	53				
	Molecular mechanisms of resistance to different					
	drug groups	57				
	Resistance to INH	58				

Resistance to RIF	63
 Resistance to EMB 	66
Resistance to PZA	68
Resistance to FQ	70
 Resistance to Streptomycin and other protein syn 	nthesis
inhibitors	71
 Resistance to other drugs 	73
6. Diagnosis of drug resistant TB	
Conventional and Rapid culture methods	76
Early detection by molecular mechanisms	83
Sequencing	83
 Probe-based hybridization methods 	83
 PCR-restriction fragment length polymorphism 	
(PCRRFLP)	84
 Single stranded conformation polymorphism and 	alysis
(SSCP)	84
Heteroduplex analysis (HA)	85
 Molecular beacons 	86
 Amplification refractory mutation system 	
(ARMS)-PCR	87

7. Treatment of MDR-TB

• F	actors affecting response to treatment	89
• C	Current available drugs and regimens for treatment	91
• N	Monitoring response to treatment and precautions	95
• N	Management of MDR- TB treatment failure patients	97
• R	Role of surgery	100
• N	New drugs and future possibilities	104
• S	uspending treatment for MDR-XDR -TB patients	121
• S	upportive care for patients who failed all treatment	
p	ossibilities	124
8. Nanote	chnology as a future therapy for MDR-TB	
• N	Vanotechnology in diagnosis of tuberculosis	126
• 1	Nanotechnology in treatment of tuberculosis	127
• N	Vanotechnology in vaccination for tuberculosis	131
9. Control	l of MDR/XDR - TB	
• F	ramework for optimal control	133
• C	Case finding strategies	143
• E	Effective treatment of detected patients	161
• E	Effective contact management	164

10.MDR / XDR - TB as a global problem

 Magnitude of resistance by region 	171
• Global burden of MDR	192
• Supra National Laboratory Network (SRLN)	199
 Drug resistance patterns 	202
Drug resistance amplification	204
11. MDR / XDR -TB as a local problem in Egypt	
12. Summary	
13. References	