MEDICINAL MUSHROOM PREPARATIONS AGAINST LUNG CANCER

Dr Ivan Jakopovich
Neven Jakopovich

DR MYKO SAN – HEALTH FROM MUSHROOMS

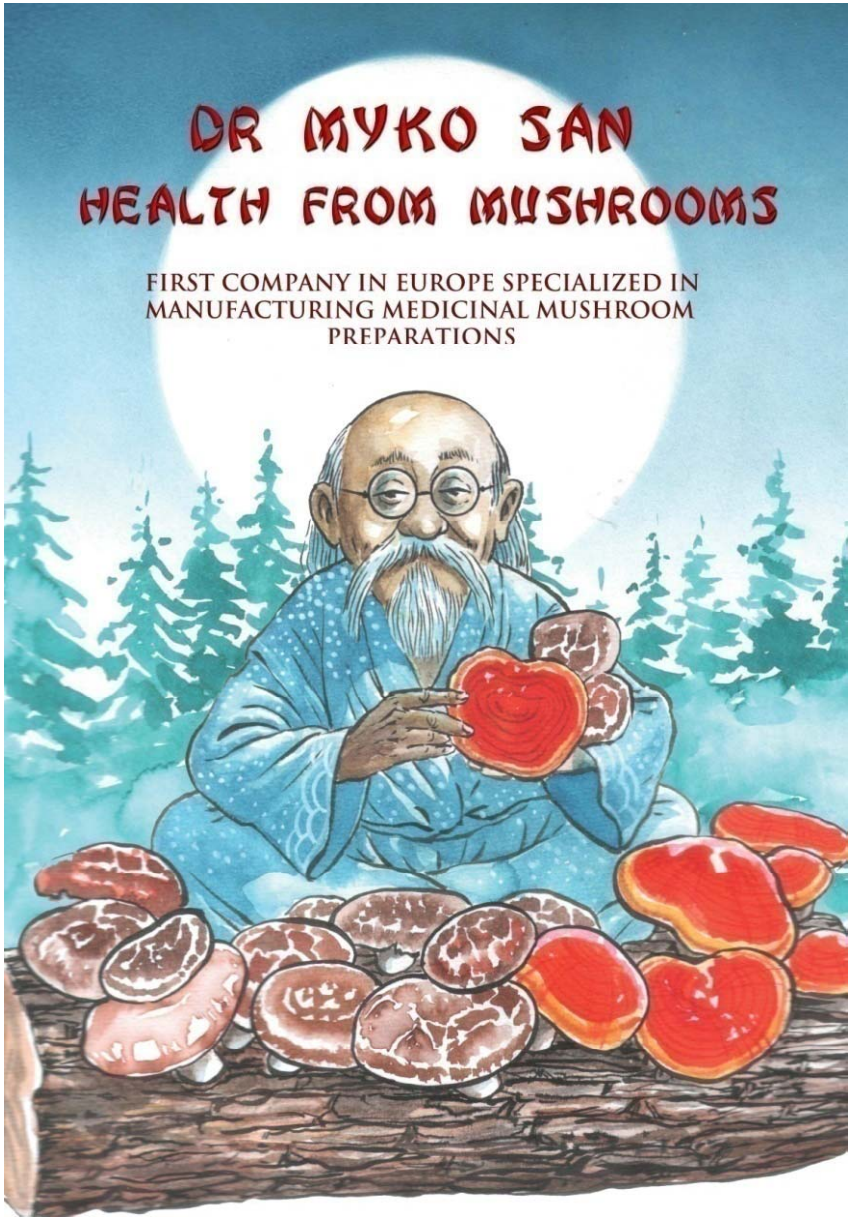
DR MYKO SAN – HEALTH FROM MUSHROOMS

basic info

based in Zagreb, Croatia (Central Europe)

developed 6 antitumor mushroom preparations

proprietary blends and modifications of extraction methods for a number of medicinal mushrooms

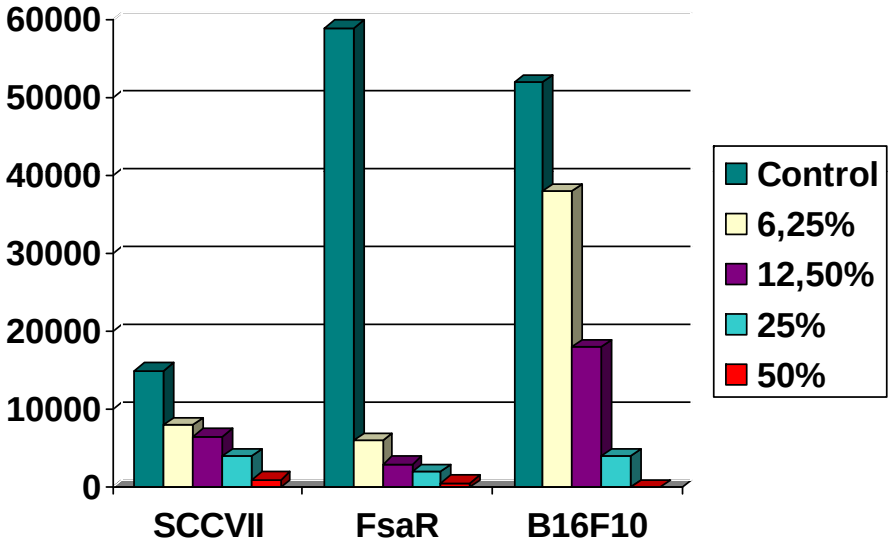


SCIENTIFIC VERIFICATION

tested at the Rudjer Boskovic Institute – Department of Molecular Medicine

very strong antitumor effects of mushroom preparations LENTIFOM and LENTRAM confirmed

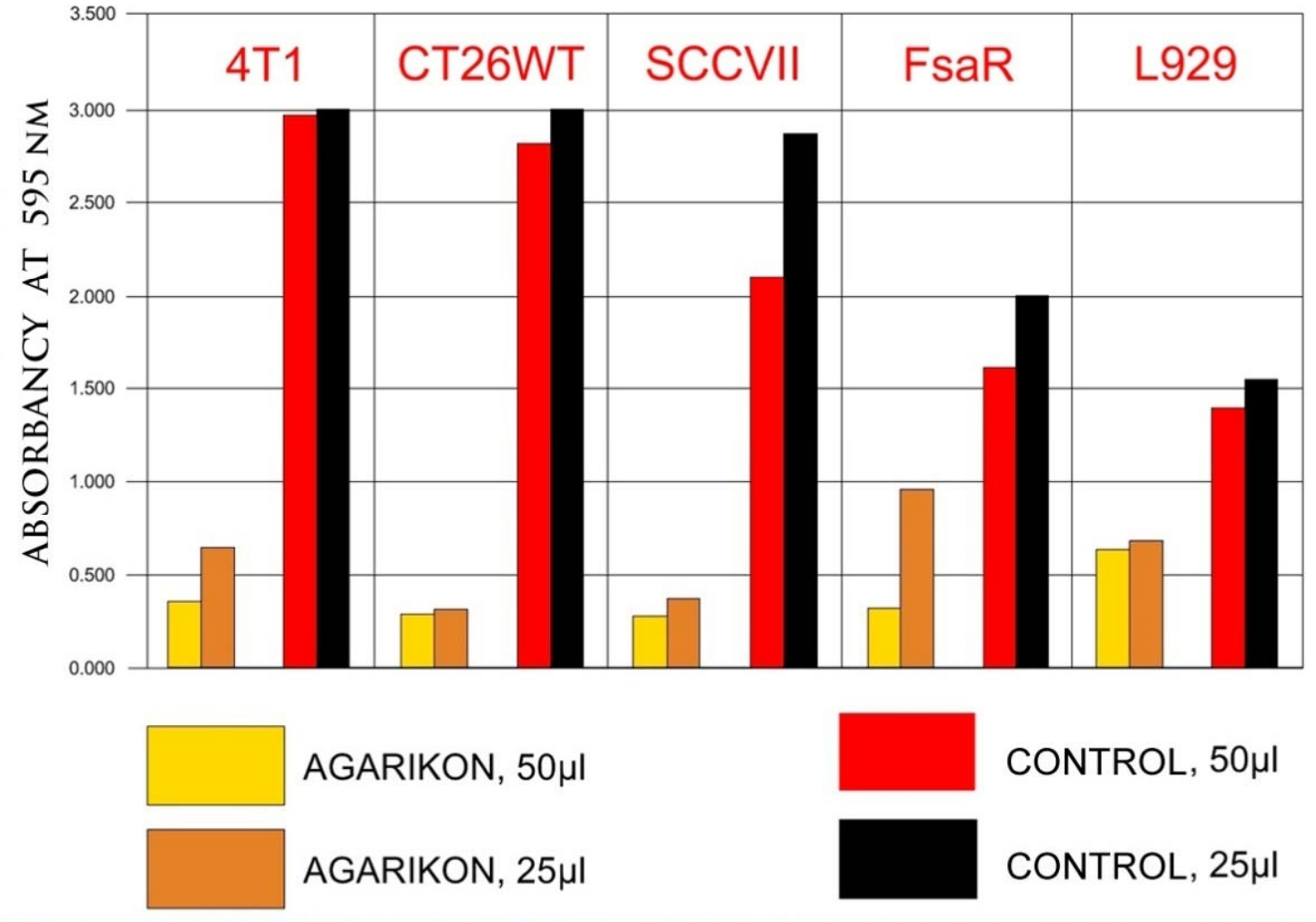
results published in International Journal of Medicinal Mushrooms, New York, 2/2004



The influence of particular doses of mushroom preparation Lentifom on 3H thymidine incorporation in SCCVII, FsaR and B16F10 tumor cells respectively ($p<0.01$).

SCIENTIFIC VERIFICATION

The diagram shows very strong inhibitory effects of 25µL and 50µL doses of preparation AGARIKON on four tumor cell culture growth:
breast adenocarcinoma (4T1)
colon adenocarcinoma (CT26WT)
squamous cell carcinoma (SCCVII)
fibrosarcoma (FsaR).



DR MYKO SAN APPROACH

mainly used as a complementary treatment (in conjunction with standard medical treatment)

most often used in difficult cases (advanced, recurrent and/or metastatic)

application of massive doses of medicinal mushroom preparations in almost all ARM cancer cases (6 - 10 forte dosages)

IMPORTANCE OF THE STUDY

A. Lung cancer is the most common cancer in the world.
    1. Incidence: 1,35 million new cases per year (12,4% of all new cancers)
    2. Mortality: 1,18 million deaths per year (17,6% of all cancer deaths)

B. Growing epidemic: the estimated number of LC cases worldwide has increased 51% from 1985 to 2002.
    1. +44% in men
    2. +76% in women

C. LC epidemic is beginning to subside in the developed countries, but is on the rise in developing countries.

DESPITE ADVANCES IN THE TREATMENT OF LC, SURVIVAL RATES HAVE CHANGED LITTLE IN THE LAST DECADE, AND LONG-TERM SURVIVAL REMAINS POOR.

Overall 5-year mortality is approx. 90 %.

SOURCE: OUTCOME PREDICTION IN CANCER (eds. Taktak and Fisher), ELSEVIER 2007, p. 67-9.

Lung cancer is usually metastatic before it is found and only a few percent of patients survive for a few years.

Advanced (metastatic) LC: the median survival from diagnosis is 4-5 months if left untreated.

Despite all research efforts, **THE RESULTS OF THE VARIOUS THERAPIES ARE FAR FROM SATISFACTORY**.

Surgery, cytotoxic chemotherapy and radiotherapy effects:

1. modest increase in survival
2. serious toxicity
3. quality of life is compromised

SOURCE: THE BIOLOGY AND TREATMENT OF CANCER (eds. Pardee and Stein), WILEY-BLACKWELL, 2009, p. 150, 208.

METODOLOGY OF THE STUDY

Time period: Jan, 2004 – Jun, 2007
Study completed on the end of June 2009.

ESSENTIALLY DIFFERENT LUNG CANCERS:
1. SMALL CELL LUNG CARCINOMA
2. NON-SMALL CELL LUNG CARCINOMA

SAMPLE SIZES:
SCLC 13
NSCLC 52

Analysis is based on official medical records (hospitals from Croatia and abroad)
Not a clinical trial - problem of INCOMPLETE DOCUMENTATION is causing a reduction of usable data and sample size in some statistical measurements, sometimes reducing our ability to draw definite conclusions.

This metodology is essentially the same as in our analysis of using DMS mushroom preparations against colorectal and breast cancers, presented at IMMC4, Ljubljana, 2007.

SCLC SAMPLE INFORMATION

Sample size: 13
Gender ratio (m-f): 10-3
Essential division – Limited vs. Extensive: 9 - 4

AGE	NUMBER IN SAMPLE
30-49	3
50-69	9
70+	1

COMORBIDITY	NUMBER IN SAMPLE
NONE	3
SINGLE CHRONIC	2
MULTIPLE CHRONIC	4
ND	4

PS (ECOG)	NUMBER IN SAMPLE
M0	4
M1	4
ND	5

INITIAL TUMOR SIZE	NUMBER IN SAMPLE
0-3 cm	1
3+ cm	5
ND/NA	7

THERAPY USE

STANDARD ONCOLOGICAL THERAPY

Chemotherapy use: 13/13 (100%)

Chemotherapy	13/13
Thoracic radiotherapy	5/6*
Prophylactic radiotherapy	4/5*

*incomplete data

MYCOTHERAPY USE

FORTE DOSAGES	NUMBER IN SAMPLE
5-6	5
7-10	5
11+	3

5/12 supplemented with SP and AG singles (1 ND)
avg. 15

IMMEDIATE RESPONSES TO MYCOTHERAPY

TUMOR SIZE CHANGE (after 1st MT)	NUMBER IN SAMPLE
COMPLETE REGRESSION	3
REGRESSION <50%	4
PROGRESSION <50%	1
ND/NA	5

PS CHANGE (after 1st MT)	NUMBER IN SAMPLE
UNCHANGED	4
IMPROVED	3
ND	6

CT TOLERANCE	NUMBER IN SAMPLE
SIDE EFFECTS NOT OBSERVED	2
ALLEVIATED	5
ND	6

LONG TERM SURVIVAL

OVERALL SURVIVAL: 4/13

SURVIVORS

SURVIVAL TIME UNTIL TERMINATION OF STUDY	NUMBER IN SAMPLE
24-36 MONTHS	1
36-48 MONTHS	3

PATIENT'S STATUS	NUMBER IN SAMPLE
DISEASE – FREE	3
LOCAL PROGRESSION	1

DEATHS

TIME TO DEATH	NUMBER IN SAMPLE
0-6	4
6-12	2
24-36	1
36-48	2

CUMULATIVE DEATHS

TIME (months)	0-12	12-24	24-36	36-48
No	6/9	6/9	7/9	9/9

SURVIVAL vs. ESSENTIAL CANCER TYPE

ESSENTIAL DIVISION	SURVIVAL	DEATHS (0-6 mths)	DEATHS (0-12 mths)
LIMITED	4/9	3/5	4/5
EXTENSIVE	0/4	1/4	2/4

Median survival time (from diagnosis)*:
- for **limited disease** approx. 14 months
- for **extensive disease** approx. 7-9 months

Less than 5% of pts. with extensive disease survive 24+ months.*

In extensive cases, two deaths occured after 36-48 months. **Median survival time in extensive cases is 27 months**.
In limited cases median survival was 37 months (at the end of the study). Survivors averaged 42.5 months (at the end of the study – June 2009.).

* *SOURCE:* Skeel, HANDBOOK OF CANCER CHEMOTHERAPY, 7th Ed., Lippincott, 2007, p. 251-252.

SURVIVAL vs. TUMOR SIZE CHANGE

TUMOR SIZE CHANGE AFTER 1ST MT	SURVIVAL
COMPLETE REGRESSION	2/3
REGRESSION 0-49%	1/4
PROGRESSION	0/1

EFFECTS OF MT ON PERFORMANCE AND CT TOLERANCE

PS CHANGE (after 1st MT)	SURVIVAL	DEATHS (0-12 mths)	SURVIVAL W/ 'TERMINALS'
NO CHANGE	1/4	2/3	1/2
IMPROVED	2/3	1/1*	2/2

CT TOLERANCE (AFTER 1st MT)	SURVIVAL	DEATHS (0-6 mths)	SURVIVAL W/ 'TERMINALS'
NO SE OBSERVED	1/2	1/1*	1/1
ALLEVIATED	1/5	3/4*	1/2

* TERMINAL PATIENTS ALSO SHOW IMPROVED PERFORMANCE AND TOLERANCE TO THERAPY

SAFETY: THERE WERE NO CASES OF DECREASED PERFORMANCE OR TOLERANCE TO THERAPY

DOSE – EFFECTS RELATIONSHIPS

DOSE	SURVIVAL	DEATHS (0-6mth)	DEATHS (0-12mth)	SURVIVAL W/'TERMINALS'
5-6	1/5	2/4	3/4	1/4
7-10	2/5	2/3	2/3	2/3
11+	1/3	0/2	1/2	1/2

INCREASE IN DOSE IS POSITIVELY CORRELATED WITH LONGER SURVIVAL

DOSE	TUMOR SIZE DECREASE	COMPLETE REGRESSION	ND
5-6	2/2	1/2	3
7-10	2/3	0/2	2
11+	3/3	2/3	0

INCREASE IN DOSE IS POSITIVELY CORRELATED WITH DECREASES IN TUMOR SIZE

NSCLC SAMPLE INFORMATION

Sample size: 52
Gender ratio (m - f): 35-17

AGE	NUMBER IN SAMPLE
30-49	5
50-69	36
70+	11

CANCER STATUS AT START

ESSENTIAL DIVISION	NUMBER IN SAMPLE
SURGICALLY RESECTED	7
ADVANCED	45

6/52 cases were recurrent

HISTOLOGICAL TYPE	NUMBER IN SAMPLE
LARGE CELL UNDIFFERENTIATED	3
ADENOCARCINOMA	24
SQUAMOUS CELL CARCINOMA	13
NA	12

TNM STAGE	NUMBER IN SAMPLE
IB	1
IIB	1
IIIA	10
IIIB	20
IV	20

TUMOR SIZE (cm)	NUMBER IN SAMPLE
0-3	2
3+	28
ND	22

METASTASES IN SAMPLE

DISTANT META NUMBER	NUMBER IN SAMPLE
0	34
1	6
2+	12

DISTANT META LOCATION	NUMBER IN SAMPLE
BRAIN	5
ADRENAL	2
LIVER	5
OTHER	6

INTRAPULMORY META	NUMBER IN SAMPLE
NO	24
YES	17
ND	11

PERFORMANCE

PS (ECOG)	NUMBER IN SAMPLE
M0	4
M1	34
M2	6
ND	8

PLEURAL EFFUSION	NUMBER IN SAMPLE
NOT PRESENT	20
PRESENT	22
ND	10

WEIGHT LOSS (kg)	NUMBER IN SAMPLE
NONE	15
0-5	10
5+	5
ND	22

HEMOGLOBIN LEVEL	NUMBER IN SAMPLE
LOW	20
NORMAL	22
HIGH	1
ND	9

THERAPY USED

CHEMOTHERAPY USE	NUMBER IN SAMPLE
USED	45
NOT USED	2
ND	5

MT FORTE DOSAGES	NUMBER IN SAMPLE
3-4	9
5-6	18
7-10	20
11+	5

RADIOTHERAPY USE	NUMBER IN SAMPLE
USED	21
NOT USED	4
ND	27

IMMEDIATE RESPONSES TO MYCOTHERAPY

TUMOR SIZE CHANGE (after 1st MT)	NUMBER IN SAMPLE
NO CHANGE	10
REGRESSION <50%	10
REGRESSION +50%	5
PROGRESSION <50%	3
ND/NA	24

PS CHANGE (after 1st MT)	NUMBER IN SAMPLE
UNCHANGED	12
IMPROVED	18
WORSENED	4
ND	18

CT TOLERANCE	NUMBER IN SAMPLE
UNCHANGED	5
SIDE EFFECTS NOT OBSERVED	2
ALLEVIATED	9
ND	35

LONG TERM SURVIVAL

OVERALL SURVIVAL: 8/52

SURVIVORS

SURVIVAL TIME UNTIL TERMINATION OF STUDY	NUMBER IN SAMPLE
24-36 MONTHS	7
60+ MONTHS	1

PATIENT'S STATUS	NUMBER IN SAMPLE
DISEASE – FREE	4
STABLE DISEASE	3
DISSEMINATION	1

DEATHS

TIME TO DEATH	NUMBER IN SAMPLE
0-6	14
6-12	12
12-24	12
24-36	4
36-48	2

CUMULATIVE DEATHS

TIME (months)	0-12	12-24	24-36	36-48
No	26/44	38/44	42/44	44/44

SURVIVAL CONSIDERATIONS

PRIMARY CHARACTERISTIC	OPTIONS	OUTCOME SURVIVAL	TOTAL DEATHS	DEATHS (0-6mth)	DEATHS (0-12mth)	DEATHS (0-24mth)	DEATHS (0-36mth)
ESSENTIAL DIVISION	RESECTED	4/7	3	0	2	3	3
	ADVANCED	4/45	42	14	24	35	39
TNM STAGE	I, II	2/2	0	0	0	0	0
	IIIA	3/10	7	1	2	7	7
	IIIB	0/20	20	7	14	17	19
	IV	3/20	14	6	10	14	16
HISTOLOGICAL TYPE	LARGE CELL UNDIFF.	1/3	2	0	0	1	1
	ADENO CARCINOMA	1/24	23	9	16	20	23
	SQUAMOUS CELL CARCINOMA	4/13	9	1	4	9	9

DOSE – EFFECTS RELATIONSHIPS

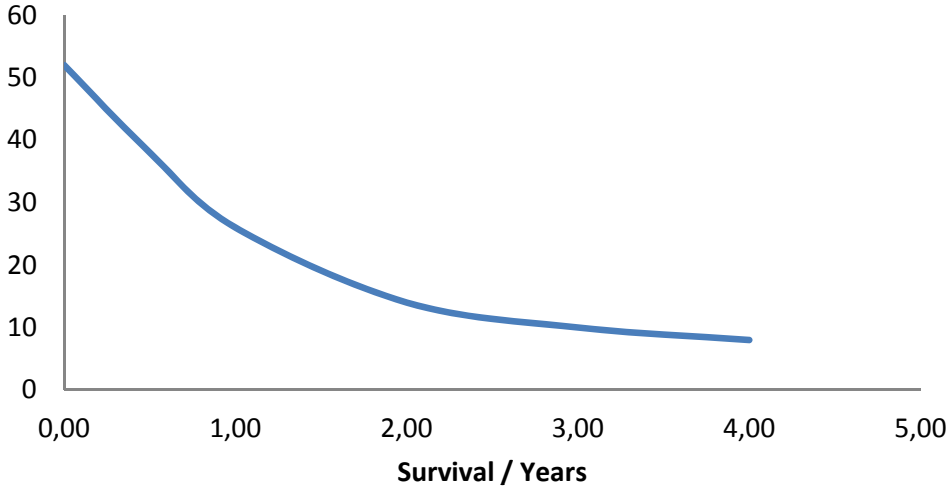
DOSE	SURVIVAL	DEATHS (0-6mth)	DEATHS (0-12mth)	DEATHS (0-24mth)
3-4	0/9	3/9	6/9	9/9
5-6	3/18	5/15	11/15	14/15
7-10	3/20	4/17	7/17	12/17
11+	2/5	1/3	1/3	2/3

INCREASE IN DOSE IS POSITIVELY CORRELATED WITH LONGER SURVIVAL

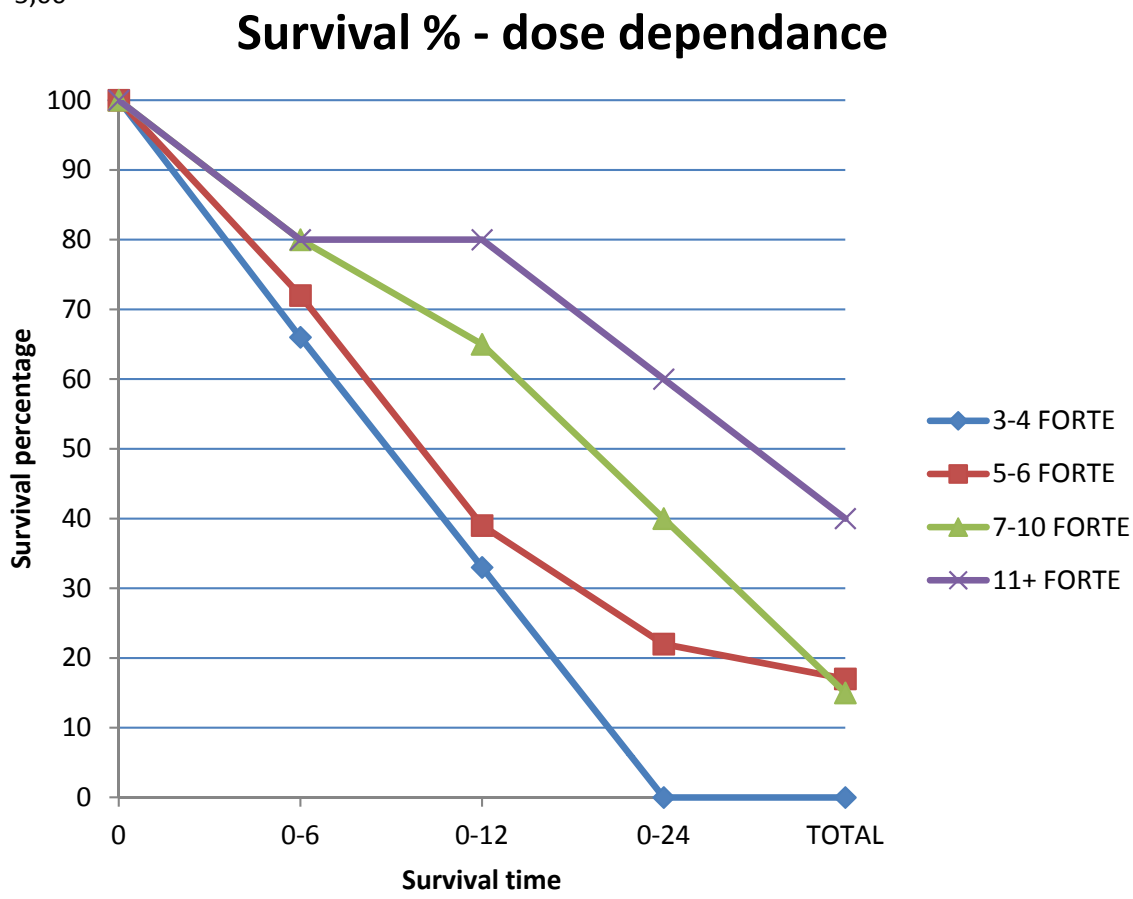
SINGLES USED
AVG. USE SURVIVORS: 9.86
AVG. USE NON-SURVIVORS: 1.95

SURVIVORS WITHIN 5+ SINGLES GROUP: 4/11

GRAPHS



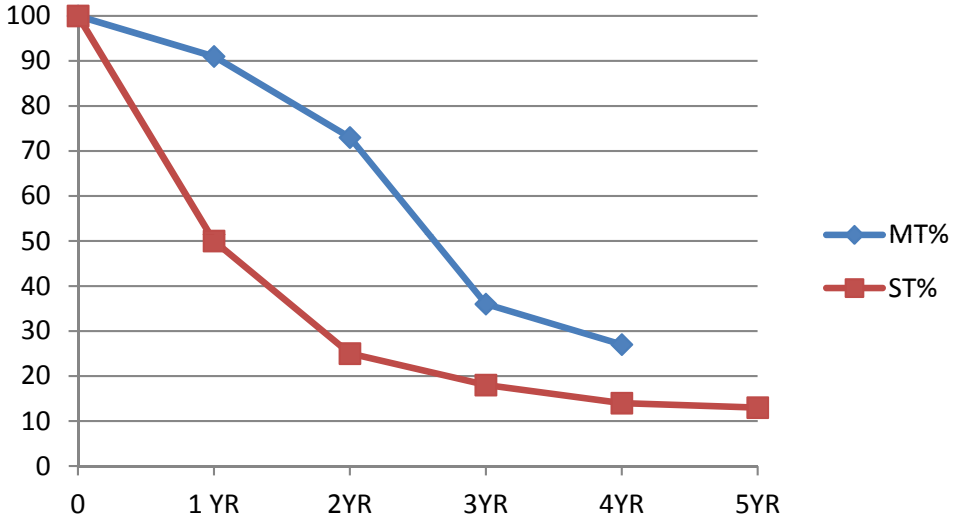
NSCLC SURVIVAL VS. TIME



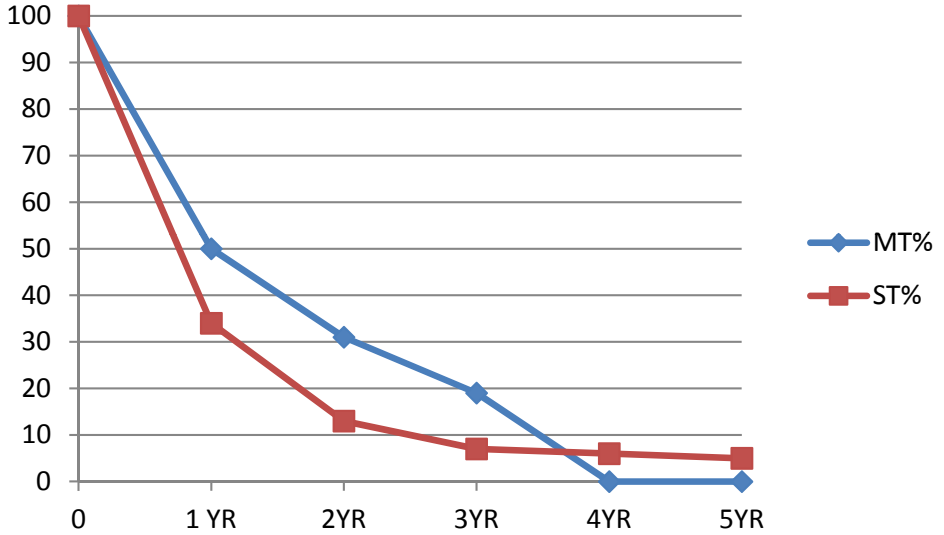
Higher doses improve survival

COMPARISON OF STANDARD THERAPY* vs. MYCOTHERAPY ON OUTCOME

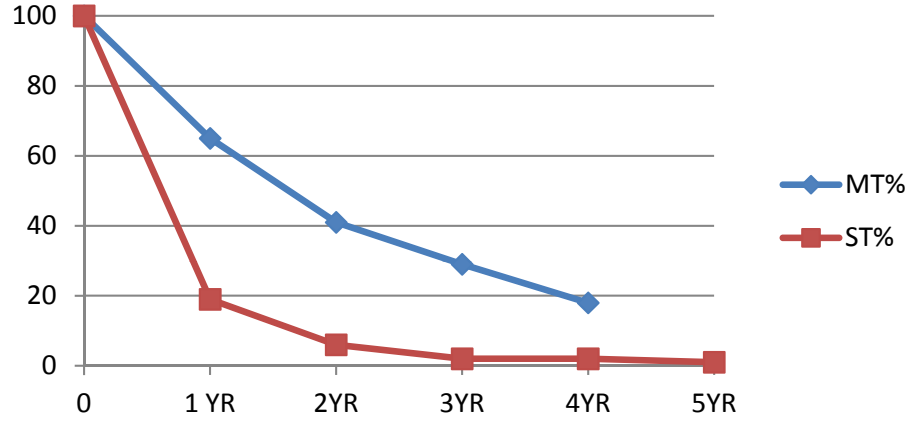
SURVIVAL % BY YEAR FOR MT vs. ST IN IIIA CASES



SURVIVAL % BY YEAR FOR MT vs. ST IN IIIB CASES



SURVIVAL % BY YEAR FOR MT vs. ST IN IV CASES



ALL THESE GRAPHS SHOW THE SURVIVAL TIME STARTING WITH TIME OF DIAGNOSIS AS WELL AS STAGE AT DIAGNOSIS. 5-YEAR SURVIVAL CANNOT YET BE ASSESSED.

* *SOURCE*: Mountain, CF (1997). "Revisions in the international system for staging lung cancer". *Chest* (American College of Chest Physicians) **111**: 1710–1717.

CONCLUSIONS

1. TUMOR REGRESSION
   MT can reduce tumor size (including complete regression in some cases) – in conjuction with chemo/radio-therapy or even independently.
2. MT AND QOL
   MT can maintain or improve performance status of cancer patients compromised by tumor and/or standard oncological therapies.
   MT can maintain a good tolerance towards cytotoxic chemotherapy or alleviate its harmful side effects.
   In these ways MT maintains or improves cancer patients' Quality Of Life, a result which is valuable in itself (independently of lifespan), especially in terminal cases.
3. LONG TERM SURVIVAL OF LC PATIENTS WITH MT
   Both SCLC and NSCLC patients:
   - survive more frequently
   - live significantly longer than LC patients using only standard oncological therapies
4. MT DOSAGE AND DURATION
   Our study confirms a positive correlation between the intensity and duration of MT and its effects:
   more intensive and longer MT = better short term and long term antitumor effects

We are not satisfied with presented results.

Therefore we have improved our mycotherapy protocol since the analized time period:

1. for ARM disease, we have established a standard prescription of 6-10 forte dosages (a significant jump from 4-6 used in the analized period)
2. we established a practice of doubling the dosage of AGARIKON in some situations
3. we developed an enhanced preparation AGARIKON PLUS, which can be applied in standard or double dosage as required
4. as maintenance MT after forte MT we usually recommend one AGARIKON every 3 months regularly

All remarks, proposal, questions etc. are welcome also through our website:

www.mykosan.com (‘Contact’ tab)

e-mail: ivan.jakopovic@inet.hr

Thank you for your attention!

Jacob Ch. Schaeffer: Vorläufige Beobachtungen der Schwämme um Regensburg, 1759.