$$K_{100}Act. = \frac{FA}{m_{yeast} \cdot \left(\frac{\%DM}{100} \right)} \quad (2)$$

2.3.2.3. Number of hours of yeast stability at 35 °C

This parameter gives changes of organoleptic characteristics of compressed yeast stored at 35 °C. That means time (in hours) to stay with standard consistency of yeast biomass kept at 35 °C.

2.3.2.4. Visual observations

This is used to determine liquefaction of compressed yeast as product and start of microorganism growth. Changing of odor is also part of these observations.

3. RESULTS

At the beginning were prepared samples of compressed yeast packs that contain 0.1% mass and 1% mass of both types of alginates as well as the sample without alginates. All samples were kept at 35 °C. After 3 days, all three samples were analyzed. Results of this examination are shown on tables 3 and 4.

Table 3. Selected parameter`s values determined for 0% mass and 0,1% mass added alginates in yeast biomass

Parameters	0% mass additives	0,1% mass alginate A	0,1% mass alginate B
FA [CO2 ml]	1550	1520	1580
DM % mass	31,28	30,62	30,46
Activity per 1 g K100 [ml]	2484	2482	2593
DM% after 3 days	26,97	27,39	27,85
Activity after 3 days [ml]	14,8 → 0	14,6 → 0	14,6 → 0
Activity kept [%]	0.58	0.58	0.56

According to results shown on table 3, all samples keep almost the same percent of fermentation activity after 3 days at 35 °C. So, there is no effect.

Samples with 1% mass alginates as well as without alginates from the same batch and kept at 35 °C, give different results. Higher activity keeps the sample with 1% mass alginate B. This step eliminates alginate A, because it has the negative impact to compressed yeast. It was decided to continue with research by using alginate B.

Table 4. Parameter`s values determined for 0% mass and 1% mass added alginates in yeast biomass

Parameters	0% mass additives	1% mass alginate A	1% mass alginate B
Initial FA [CO2 ml]	1640	1615	1620
DM %	30,75	31	30,94
Initial activity per 1 g K_{100} [ml CO_2/gK_{100}]	2666	2784	2618
DM% after 3 days	27,00	29,0	29,0
Activity after 3 days [ml CO_2/gK_{100}]	435	401	603
% keep activity	16,31	14,40	23,03

Next step was preparing of compressed yeast samples with 0%, 0,1%, 0,4%, 0,7% and 1% (%mass) content alginate B. All this samples were stored at 35 ^oC. Activity and dry matter are determined after 1 and 3 days period. All samples give different values for fermentation activity as well as organoleptic characteristics. Those results are shown on table 5.

Table 5. Parameter`s values from examination of yeast biomass with a different percentage of alginate B at 35 ^oC

% alginate B	0% mass	0.1% mass	0.2% mass	0.4% mass	0.7% mass	1% mass
initial FA [ml CO_2/gK_{100}]	2717	2717	2371	2717	2717	2717
DM%	31.56	31.56	31.00	31.56	31.56	31.56
Activity after 1 day [ml CO_2/gK_{100}]	2395	2576	2311	2051	2324	2106
DM%	29.5	28.32	29	29	28.71	28.93
% activity keep	88.15	94.81	97.47	75.49	85.54	77.51
Activity after 3 days [ml CO_2/gK_{100}]	0	1615	1614	1894	655	-
DM%	47.08	33.73	31	31	45.45	-
% Activity keep	0	59.44	68.07	69.71	24.11	-
Consistency	Non specific	Stabile, non specific smelt	Stabile	Stabile	Stabile	Stabile
Hours of stability	120	192	-	192	192	252

Stability of the compressed yeast increase with increasing of alginate's concentration (Table 5). That is reasonable, because alginates have a purpose to make better liquid food consistency. According to this, alginate B had a positive impact with compressed yeast. Microorganisms didn`t grow and yeast has normal odor. So, organoleptic characteristic of

packed compressed yeast is constant and don`t change with time. Compressed yeast without alginate B show nonspecific odor and change of consistency. Adding of alginate B in concentration range between 0.1% mass and 0.7% mass show the same keep of stability hours. This samples increase stability for 60% related to referent sample. Fermentation activity is one of the most important parameters for compressed yeast. Its change is shown on figure 1. All values of activities are decreasing with different intensity. Referent sample without alginate B has the highest intensity of fermentation activity decreasing. If different fermentation activities were compared (figure 1), samples with 0.2% mass and 0.4% mass represents best results. After 3 days, both samples have similar fermentation activity, which is the highest after that time period compared with the rest of samples. Curves that describe samples with 0.2% mass and 0.4% mass have different shapes (Figure 1). Curve shape for sample with 0.2% mass is better, because it keeps high activity for longer time. In case of sample with 0.4% mass, activity decrease in the beginning. After 3 days, its activity is stabilized. If extrapolation was used, sample with 0.4% mass alginate B has an intention to keep last activity for longer time. Sample with 0.2% mass alginate B has an intention to keep decreasing.

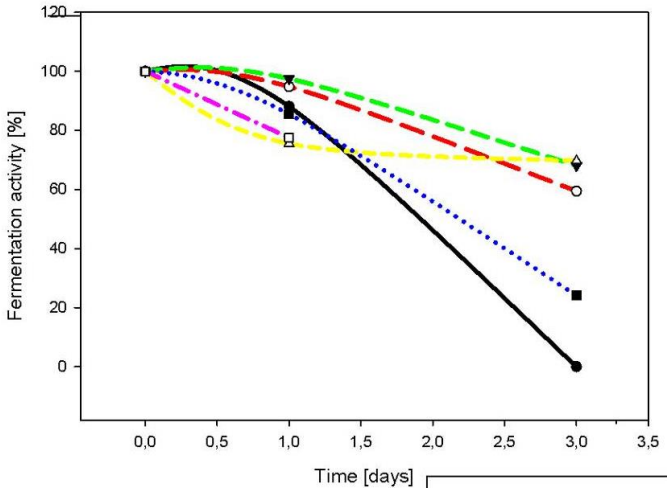

Figure 1. Depending of activity decreasing with time of storing at 35 oC for different concentrations of added alginates (• - 0% mass alginate, - 0.1% mass alginate, - 0.2% mass alginate, - 0.4% mass alginate, - 0.7% mass alginate, (dash-dot-dash line) – 1% mass alginate

The best stability of organoleptic characteristics shows the sample with highest content of alginate B (Figure 2). This sample could not be chosen as the best, because its fermentation activity has enormous decreasing. Decreasing of fermentation activity at higher concentrations than 0.5% mass alginate B is caused by change of yeast solubility in water. That problem makes lower transport of feed to yeast cells in dough. Lower solubility gives lower homogenization of yeast in dough, so fermentation activity is lower.

Samples with 0.2% mass and 0.4% mass alginate B were stored at room temperature (25^{o}C). Their consistency gives excellent results. Stability was very high and close to the starting values for one month. Fermentation activity has very low decreasing.

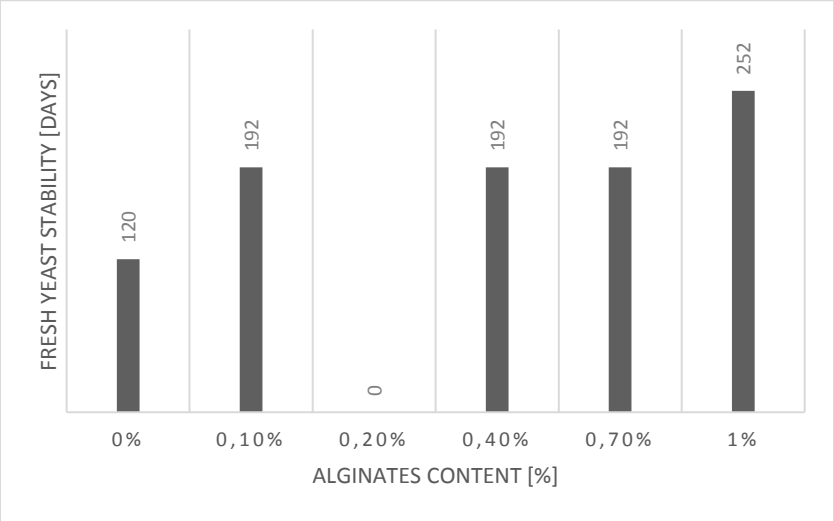

Figure 2. Stability of compressed yeast with different concentrations of alginates added and stored at 35°C

4. CONCLUSION

Baker`s yeast producers have problems with keeping yeast`s fermentation activities. That is specially expressed in summer days. That was the reason of this research. Alginates are used for changing yeast fermentation activity and organoleptic stability. Samples of compressed yeast with 0%, 0.1%, 0.2%, 0.4%, 0.7% and 1% (as %mass) alginates were tested. Results showed the most stable samples according to its fermentation activity and organoleptic characteristics. Samples with alginate B content 0.2% mass and 0.4% mass show the best values. These examinations give us two limitations for using alginates. Increasing of alginate concentration, decrease water solubility of yeast. Higher concentration of alginates makes higher cost in packaging process. Concentrations that are below 0.5% mass are useable, because its better solubility. Comparing the results, concentration of 0.2% mass alginate B is the optimal value. It gives normal solubility of compressed yeast, higher stability of biomass and keeping the fermentation activity the highest. All tests are made in extreme conditions for yeast storage. Storage at temperatures below 10 °C would give good results for using lower concentrations of alginates. Alginates could make a slower process of fermentation activity decreasing as well as to keep standard consistency for longer time. Microorganisms grow slower because of water absorption by the alginates.

ABBREVIATIONS

K100.Act. – fermentation activity calculated for 1 gram biomass with 100% dry matter
K100 – according to yeast with 100 % of dry matter

FA – Fermentation activity determined with SJA fermentograph
aw – water activity
po – vapor pressure of an aqueous solution
p – vapor pressure of the gas dissolved in water
myeast – mass of compressed yeast sample
Act.1hour – measured activity of compressed yeast for 1 hour of fermentation in SJA fermetograph
Act.2hour – measured activity of compressed yeast for second hour of fermentation in SJA fermetograph

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Remodeling Suburban Settlements of Skopje

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ABSTRACT

In the last decades the citizens of Skopje are witnesses of serious urban degradations in almost any part of the capital. The process of high-speed densification of a built area creates series of side effects like: lack of natural daylight, bigger pollution, absence of proper views, decreasing of green area, diminishing the natural aeration etc. Therefore the unsatisfied citizens are starting to move outside of those extremely dense urban districts looking for cheaper building plots in the existing suburban settlements and looking for better life conditions. The city authorities are not responding to those tendencies in a proper way, because there is no any initiative to create urban plans covering bigger areas than the current DUPs (Detailed Urban Plans) in order to allow a complete and proper development of existing suburban areas. The goal of this paper is to create series and profound analyzes, and to propose new urban project for remodeling suburban settlements in existing location detected as a potential city hot spot. This project will define hospitable dwelling destinations for the possible future users for a long term and it could establish new guidelines for the future urban politics in the Macedonian capital.

Keywords: ***suburban area; dwelling zone; urban development***

1. INTRODUCTION AND CURRENT CONDITION

"Begin anywhere. John Cage tells us that not knowing where to begin is a common form of paralysis. His advice: begin anywhere.[i]*"*

AN INCOMPLETE MANIFESTO FOR GROWTH
Bruce Mau

Before we focus on the priorities for the sustainable city's growth, we shall try to determinate the basic current tendencies in urbanism.

One of the primary goals of each architect and urbanist is to provide a decent life of every citizen for his home and for his city. Regarding the capital of Macedonia this goal becomes an immense and serious challenge observing the existing condition of the city in general. The saturation of living space and dwelling areas isn't only existing issue. The point is that this major problem produces a growing list of consequences related with: ecology, sociology, health, and real estate values of new built high rising buildings.

The biggest, and the most painful transformation that is going on in Macedonia's capital and the rest of the cities of the country, is the demolishing the detached and attached houses in the residential areas, and construction of high rising dwelling buildings at their plots. In fact, that is unfortunately a financial interest of the municipality, and as well the occupants of the old houses, because the citizens prefers to earn some money by selling their home to an investor who will "awarded" the occupants with new apartments in the new building. The municipality budget is depending of the communal taxes gained by every new constructed square meter. And….everybody is happy!? Apparently no! The new homes are without views because of the extremely dense constructed space. Second, there aren't enough parking spaces for the new users of the new buildings. Third, the road and other infrastructure remains the same which means traffic jams in small streets, no pedestrian paths, lack of electricity power, lack of water pressure, and off course, the disappearing of green zones[i].

In order to respond to the unsatisfied citizens of this outgoing densification of almost every part of the city, the government of the Republic of Macedonia proposes several short term solutions. In general, all of those state initiatives are introducing new Detailed Urban Plans (DUPs) outside of urban quarters offering cheap terrains for the construction of new houses. The problem are those new locations, it is not a problem the governmental initiative. The thing is that the new locations for construction are only partly organized with new DUPs which mean that there are absence of a creation of a bigger scale plans and absence of quality connections of new dwelling quarters and the rest of the city. Their treatment as urban isolated islands designed only with dwelling areas and without any public contents doesn't guarantee a sustainable existence and proper development in the future. These short time proposals and solutions for the urban development of the Macedonian capital unfortunately make new possible urban problems in a very close future.

2. METHODOLOGY

In order to establish a proper methodology of this research, we are proposing a series of analyses of current Detail Urban Plans (DUPs) approved by the local authorities. Also, a profound research of current quarters of Skopje and its surroundings regarding the possibilities of remodeling of the current urban context will be part of the methodology.

The second step of this research will be selection of possible future hotspots of case studies.

In parallel, we will try to make a comparison between selected feasible urban areas and similar foreign examples in order to facilitate the research and to improve our proposals[ii].

3. RESULTS AND PROPOSALS FOR POSITIVE URBAN TRANSFORMATION

As it was already shown before, the primary objective of this paper is to try to establish main guidelines and new strategy for the proper future growth of Skopje. The basic question is: “How to avoid the increasing number of people who are leaving the capital of Macedonia escaping from one of the most polluted city in Europe and from the city without prosperity in the urban development?”

While we are waiting for someone to purify the air and to stop the “urban tsunami” in Skopje, we are filling obligated to propose some urban cures for short, middle and long term in order to establish much higher quality of living conditions. And therefore we propose two main activities.

The first one is “Remodeling the current urban, suburban city settlements and rural areas around Skopje” and the second one is: “Modeling-Creating from scratch the New Satellite Smart Cities (NSSC)[iii]”

3.1. Remodeling the current urban, suburban city settlements and rural areas around Skopje

During the process of collecting GIS and DUP data, detailed analyses of the collected data and detecting and selecting the best locations for the future urban development we are proposing these three urban interventions with defined locations in and around Skopje:

1. *Remodeling the existing urban area -“Novo Maalo” in the center of Skopje*
2. *Remodeling the existing suburban settlements in order to make it more independent as much as it could be - Village of Bardovtsi, Zlokukjani and surrounding housing-dwelling area.*
3. *Remodeling the existing rural settlements-Villages of Dolno Sonje and Gorno Sonje* (Fig. 1.)

In this chapter we could only propose a general strategy of possible urban intervention in those existing city parts. All of them are selected as a city quarters with the promising potential to become new high quality residential areas. Novo Maalo, Bardovci and Sonje have enough free space inside and around their existing boundaries which give us possibility to make interventions and to fill all the unused and uninhabited empty spaces with new public contents, new infrastructures and new building plots for new housing areas with individual private gardens and new organized green zones.

Detailed analyzes, for each of those three examples will be a separate subject for our future papers.

In the following chapter we will focus on possible urban transformation of the surrounding areas of Skopje and the creation of new satellite cities named “New Satellite Smart Cities” (NSSC).