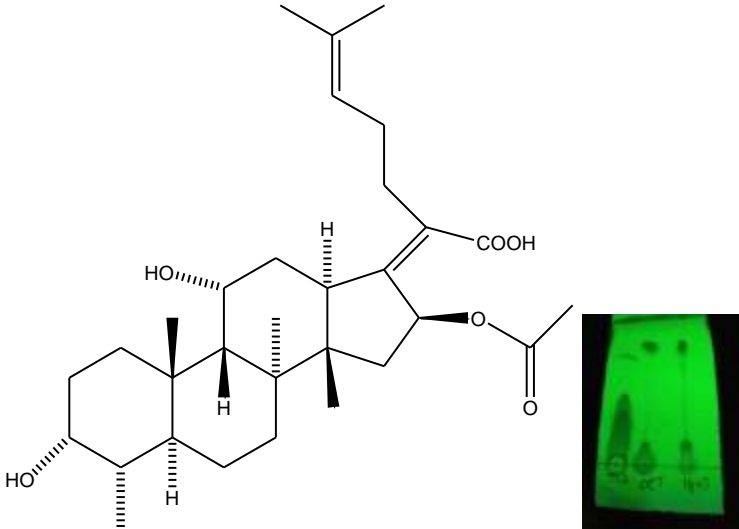




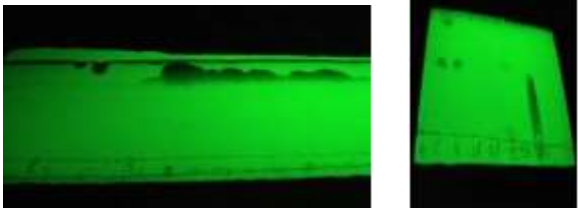
## Final Year Project Showcase Batch-2017 Year 2021

<b>Department: Chemistry</b> <b>Programme: Industrial Chemistry</b>		
1	<b>Project Idea</b>	<b>Synthesis and Characterization of the Derivatives of Fusidic Acid and its Antioxidant Activity</b>
2	<b>Process</b>	In this project eleven ester derivatives of Fusidic acid (FA) have been synthesized. Synthesized compounds were analyzed by Fourier Transform Infrared (FTIR) and <sup>1</sup> H-NMR Spectroscopy. In addition, the antioxidant activities of FA and its derivatives were evaluated.
3	<b>Outcome</b>	Fusidic acid is a potent congener of the fusidane triterpenoid class of antibiotics. Structure-activity relationship (SAR) studies suggest the chemical structure of FA is optimal for its antioxidant activity. It is noted that all the aromatic derivatives of FA were found to be more active than the aliphatic compounds. SAR from our group within the context of a drug repositioning approach in antioxidants suggest that, as with its antioxidant activity, the C-21 carboxylic group is indispensable for its antioxidant activity. When replacing carboxylic group (-COOH) into ester (-COOR) group the increased antioxidant activity was observed.
4	<b>Evidence (Theoretical Basis)</b>	FA is an antibiotic derived from the fungus <i>Fusidium corcineum</i> and the only commercially available antibiotic from the fusidane group. It has a steroid structure without steroid activity and with chemical similarities to cephalosporin P1. The sodium salt of FA (Sodium fusidate) is used clinically. The mechanism of resistance to FA have been recently reviewed. Although FA resistance were noted globally until the past ten years or so.
5	<b>Competitive Advantage or Unique Selling Proposition</b> (Cost Reduction, Process improvement, Attainment of any SDG (Sustainable Development Goal), increase of market share or capturing new market or having superior performance over a competitor. In summary, any striking aspect of the project that compels the industry to invest in FYP or purchase it. Some detailed description is required in terms of how, why when what. You can select one or more from the following dropdown and delete the rest of them). Please keep relevant options, delete the rest of them, and correct the sequence	
a	<b>Cost Reduction of Existing Product</b>	It will be pocket friendly when we produce it on bulk scale. These derivatives are so simple and cost effective antioxidants
b	<b>Process Improvement which Leads to Superior Product or Cost Reduction, Efficiency Improvement of the Whole Process</b> (e.g. What is the issue is current process and what improvement you suggests)	Previously FA has been reported as an antibiotic. Now we are reporting antioxidant activity of FA and its ester derivatives. This is the first report of the antioxidant activity of FA ester derivatives.
c	<b>Attainment of any SDG</b> (e.g. How it is achieved and why it is necessary for the region)	<b>SDG#13 Climate Action</b> During our literature survey we basically work on environment friendly chemicals and during the period the chemicals that are use in our project is quite more environment friendly.



<b>d</b>	<b>Expanding of Market share</b> (e.g. how it expand and what is the problem with the current market)	It will capture new market because it will serve the necessary requirement to the pharmaceutical industry, also it is environment friendly, the cost of synthesis is very less, equipment and wares required very less. simply more benefits than cost in production also more useful and could be altered
<b>e</b>	<b>Capture New Market</b> (e.g. Niche market or unaddressed segment)	These derivatives provide a scientific basis for developing FA derivatives as antioxidant agents for pharmaceutical industry. It will capture new market because it will serve the necessary requirement to the pharmaceutical industry, also it is environment friendly, the cost of synthesis is very less, equipment and wares required very less. simply more benefits than cost in production also more useful and could be altered.
<b>f</b>	<b>Any Environmental Aspect</b> (e.g. carbon reduction, energy-efficient, etc.)	As the chemicals are use in synthesis are environment friendly so it will not affect terribly to environment or not creating pollution.
<b>g</b>	<b>Any Other Aspect</b>	--
<b>6</b>	<b>Target Market</b> (Industries, Groups, Individuals, Families, Students, etc) Please provide some detail about the end-user of the product, process, or service	FA is a narrow spectrum bacteriostatic antibiotic and possess many biological activities. In our study good antioxidant activity of the derivatives have been observed. The description of the activity of FA and its ester derivatives opens a new window for investigation in pharmaceutical industry.
<b>7</b>	<b>Team Members</b> (Names & Roll No.)	Hasnain Ahmed IC-17054 Muhammad Yaseen IC- 17047 M. Safwan bin Nadeem IC- 17302 Noman Aslam IC- 17041
<b>8</b>	<b>Supervisor Name</b>	Dr. Anjum Ayub
<b>9</b>	<b>Supervisor Email Address</b>	<a href="mailto:anjumayub@neduet.edu.pk">anjumayub@neduet.edu.pk</a>
<b>10</b>	<b>Pictures (If any)</b>	



		
<b>11</b>	<b>Video (If any)</b>	--