

FENOL VA UNING XOSSALARI



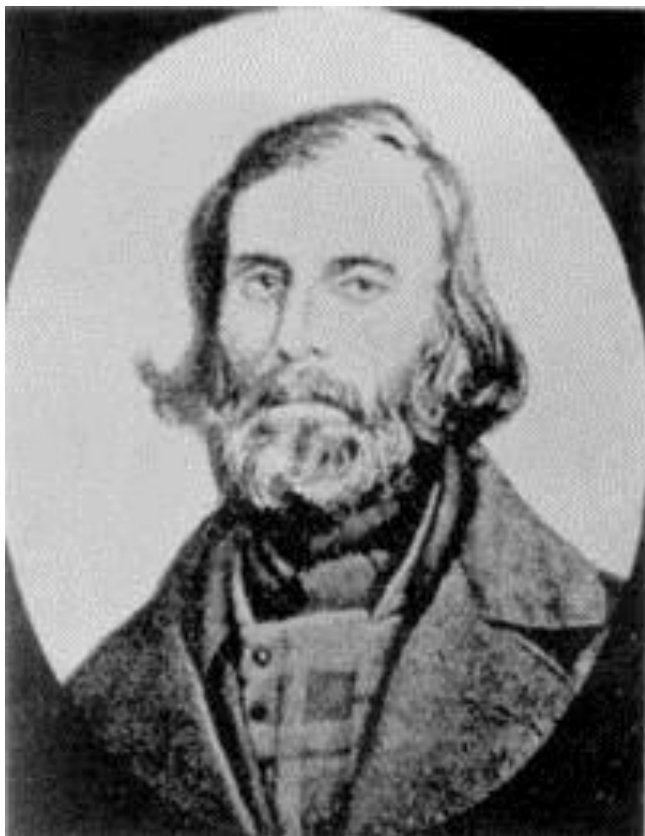
Darsning vazifalari

- Fenolning va uning birikmalarining tarkibini, tuzilishini va xossalarini o'rganish.
- Fenol molekulasidagi atomlarning o'zaro bog'liqligini uning xossalariga ta'sirini ko'rib chiqish.
- Fenolning fizikaviy va kimyoviy xossalarini ko'rib chiqish va unga sifatli reaksiyalarni o'rganish.
- Fenolni va uning birikmalarini tabiatda uchrashi, qo'llanilishi, biologik rolini ko'rib chiqish.

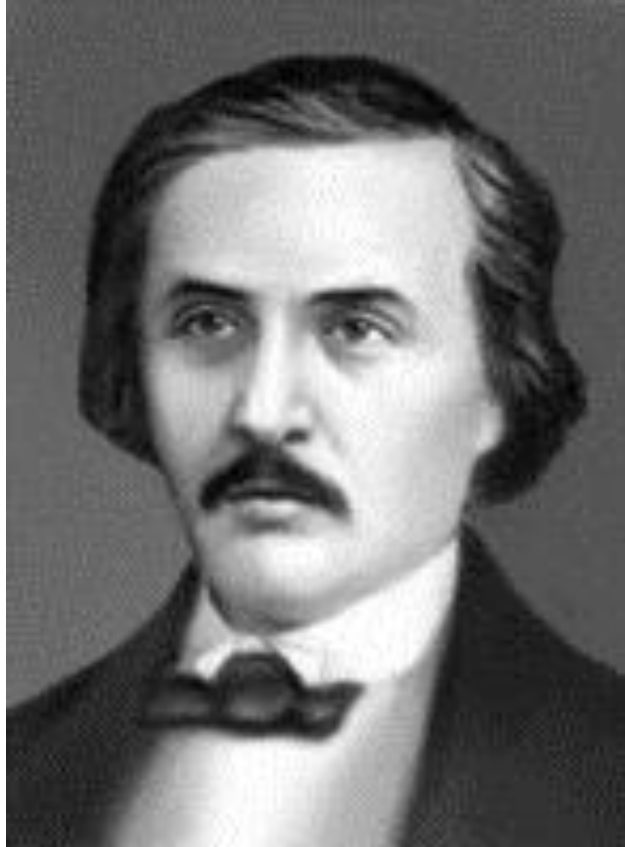
Tarixiy ma'lumotnoma



*1834 yilda nemis kimyogar-organiki **Fridlib Ferdinand Runge** toshko'mir smolasini haydash mahsulotlarida xarakterli hidga ega bo'lgan oq kristal mahsulotni aniqladi . Lekin u modda tarkibini aniqlay olmadi.*



1842 yilda **Ogyust Loran** modda tarkibini aniqladi. Yngi modda yaqqol kislotali xossaga ega edi va yqindagini ochilgan benzol hosilasi edi. Loran bu moddani benzol “fen” deb nomladi, shu sababli yangi kislota **fenil** kislotasi degan nom oldi.



*Sharl Fridrek Jerar olingan moddani spit debhisobladi va **fenol** deb nomlashni taklif etdi. Aniqylanadiki, bir guruh moddalar o'xshash tuzilishga va xossalarga ega ekan shu sababli ularni "fenollar" deb nomlandi.*

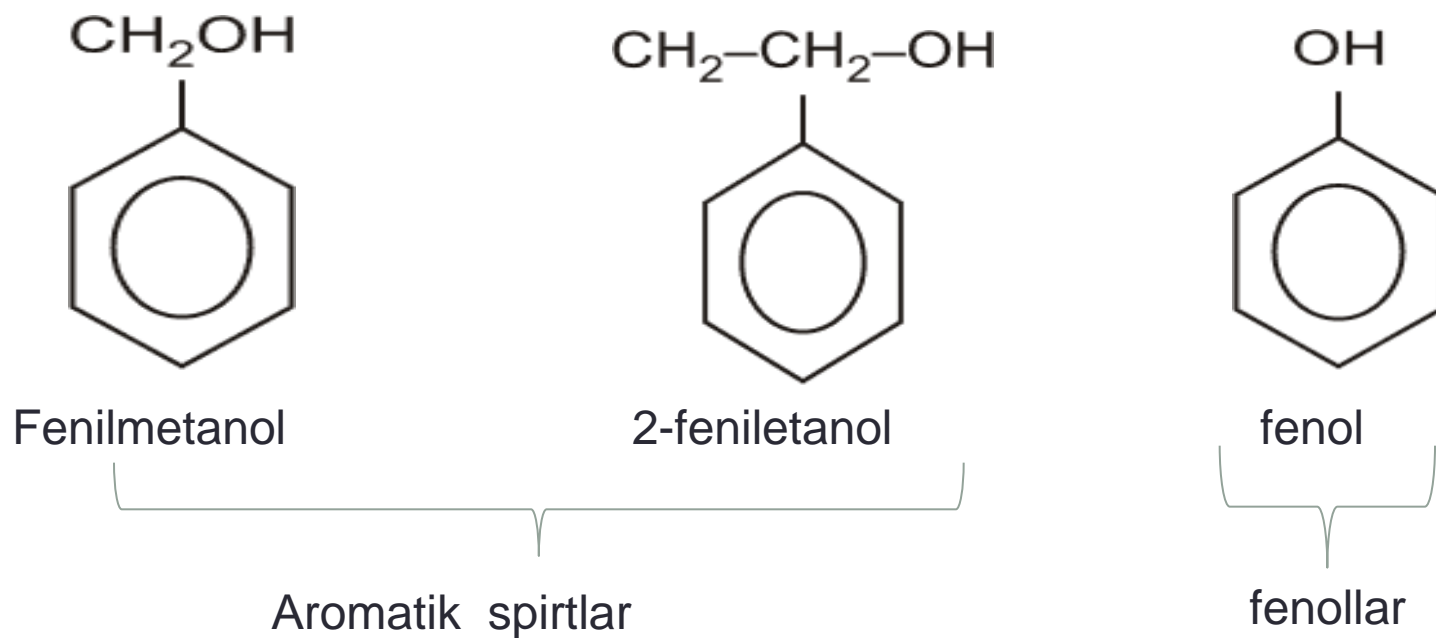
- siz qanday o'ylaysiz moddalar tarkibiga qanday fragmentlar kiringandi?



бензол xalqasi



gidroksil guruhi



- ***Bu moddalar orasida qanday farq bor?***
- ***Bu moddalarning kimyoviy xossalari bir-biridan farq qiladimi? (A. M. Butlerovning kimyoviy moddalar tuzilish nazariyasining uchunchi holatini eslang)***

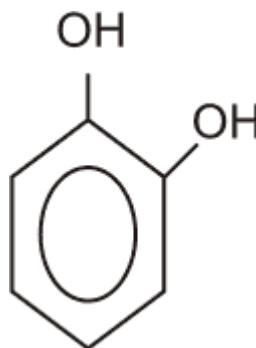
Fenollar – bu aromatik uglevodorodlarning hisilalari hisoblanadi, ularning molekulasida gidroksil guruhi benzol yadrosi bilan bog'langan.

Katomlilik bo'yicha sinflanishi

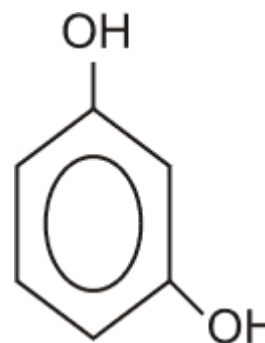
bir atomli



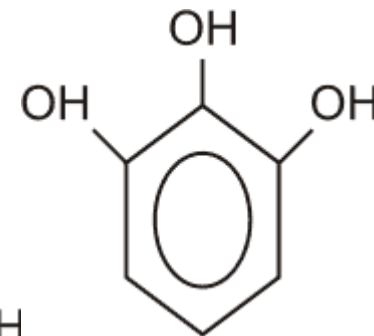
ko'p atomli



1,2 - digidroksibenzol
(pirakatexin)



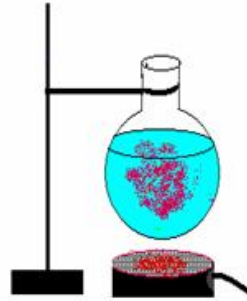
1,3 –digidroksibenzol
(rezotsin)



Fenolning fizikaviy xossalari



Qattiq kristal modda



Qizdirilganda eriydi



O'tkir xarakterli hidga ega



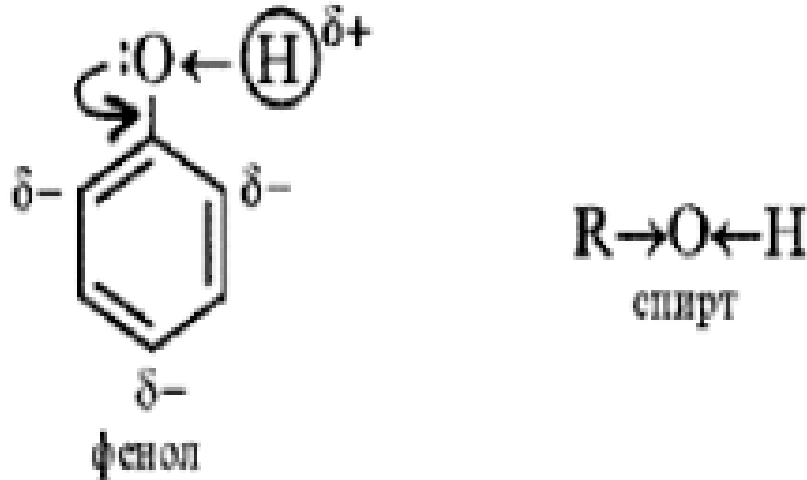
Teriga tegsa kuydiradi.

Texnika xavfsizlik qoidalariga rioya qiling!!!!

Fenol zaharli!!!



Fenol molekulasining tuzilishi



- Kislород atomining juft elektronlari 6-elektronli benzol xalqasiga tortiladi, shu sabli O-H bog'ining qutblanishi yana ham ortadi. Fenol – suvga va spirtlarga nisbatan kuchli kislota .
- Benzol xalqasida elektron bulutlarning simmetrikligi buziladi, 2,4,6 – holatda elektron zichligi ortadi. C – H bog'ini nisbatan benzol xalqasi 2,4,6 - holitida reaksiyaga kirishish qobiliyati yuqoriroq bo'ladi.

Feolning kimyoviy xossalari

1) Fenolning kislotalik xossalari: gidroksil guruhidagi vodorod atomining o'rnini olish reaksiyalari.

1) Faol metallar bilan o'zaro ta'siri



2) Ishqorlar bilan o'zaro ta'siri

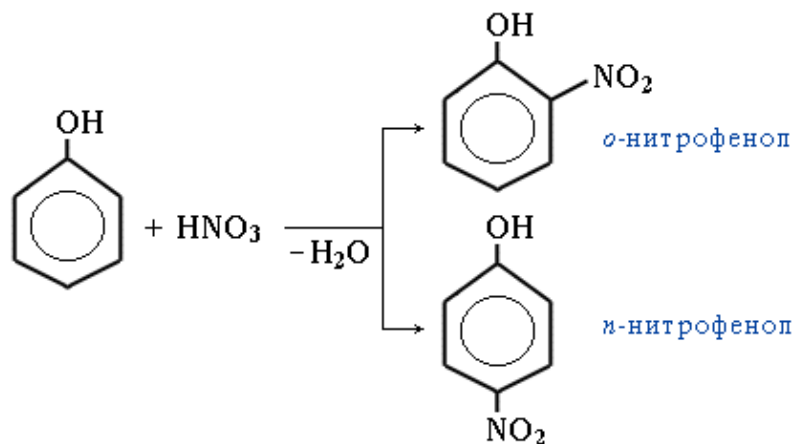


Fenolning kislotalik xossasi anorganik va karbon kislotalarga nisbatan kuchsizroqdir.

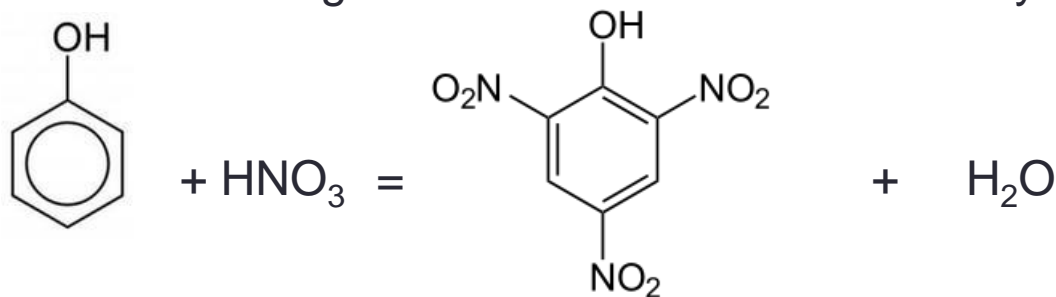
Fenolning kimyoviy xossalari

II) Benzol xalqasining reaksiyalari (benzol xalqasidagi vodorod atomning o'rnini olish reaksiyalari).

1) Suyultirilgan kislota bilan fenolni nitrolash reaksiyasi:



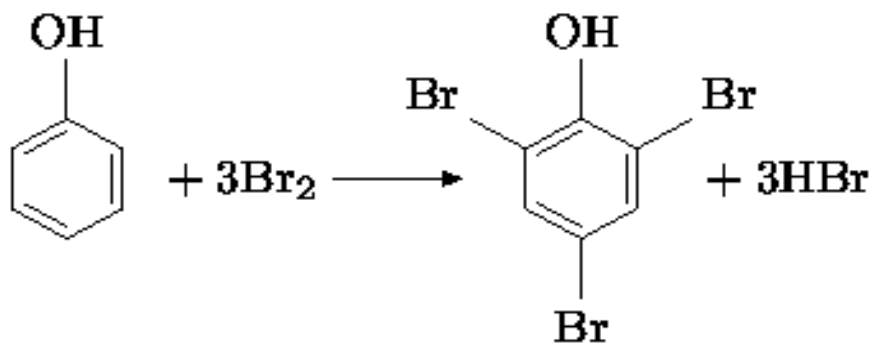
2) Fenolni konsentrlangan kislota bilan nitrolash reaksiyasi



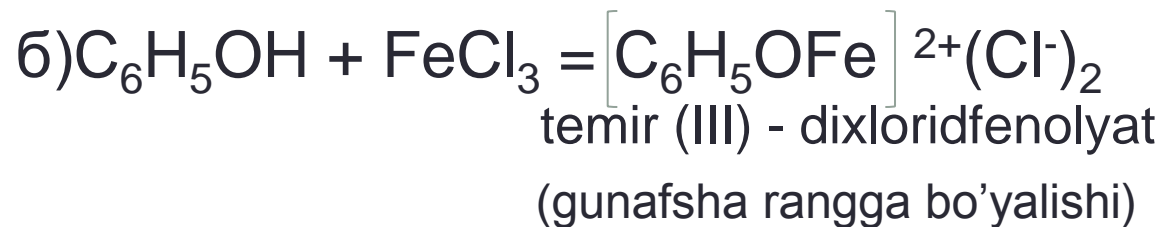
pikrin kislota

3) Fenolga sifat reaksiyasi

a) Fenolni bromlash

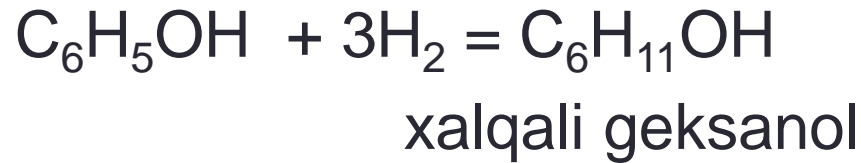


2,4,6- tribromfenol

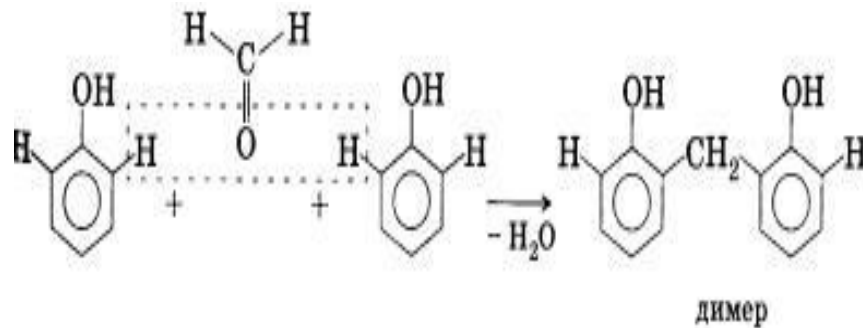


IV) Birikish reaksiyalari

a) fenolni gidrogenlanishi

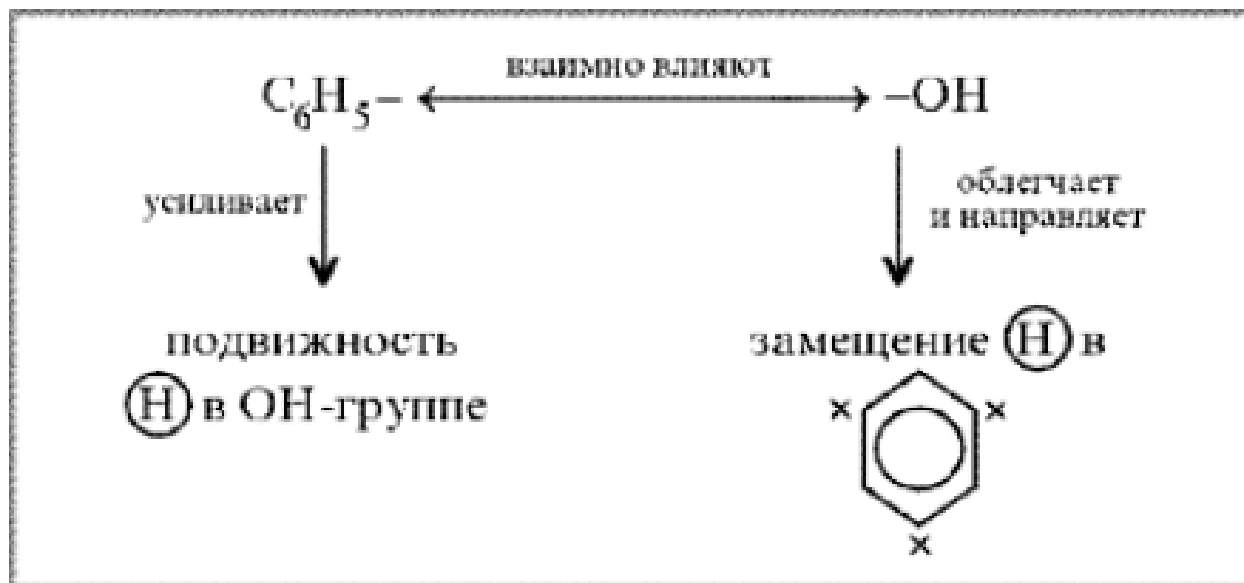


б) Fenolni al'degidlar bilan polikondensatsiyasi



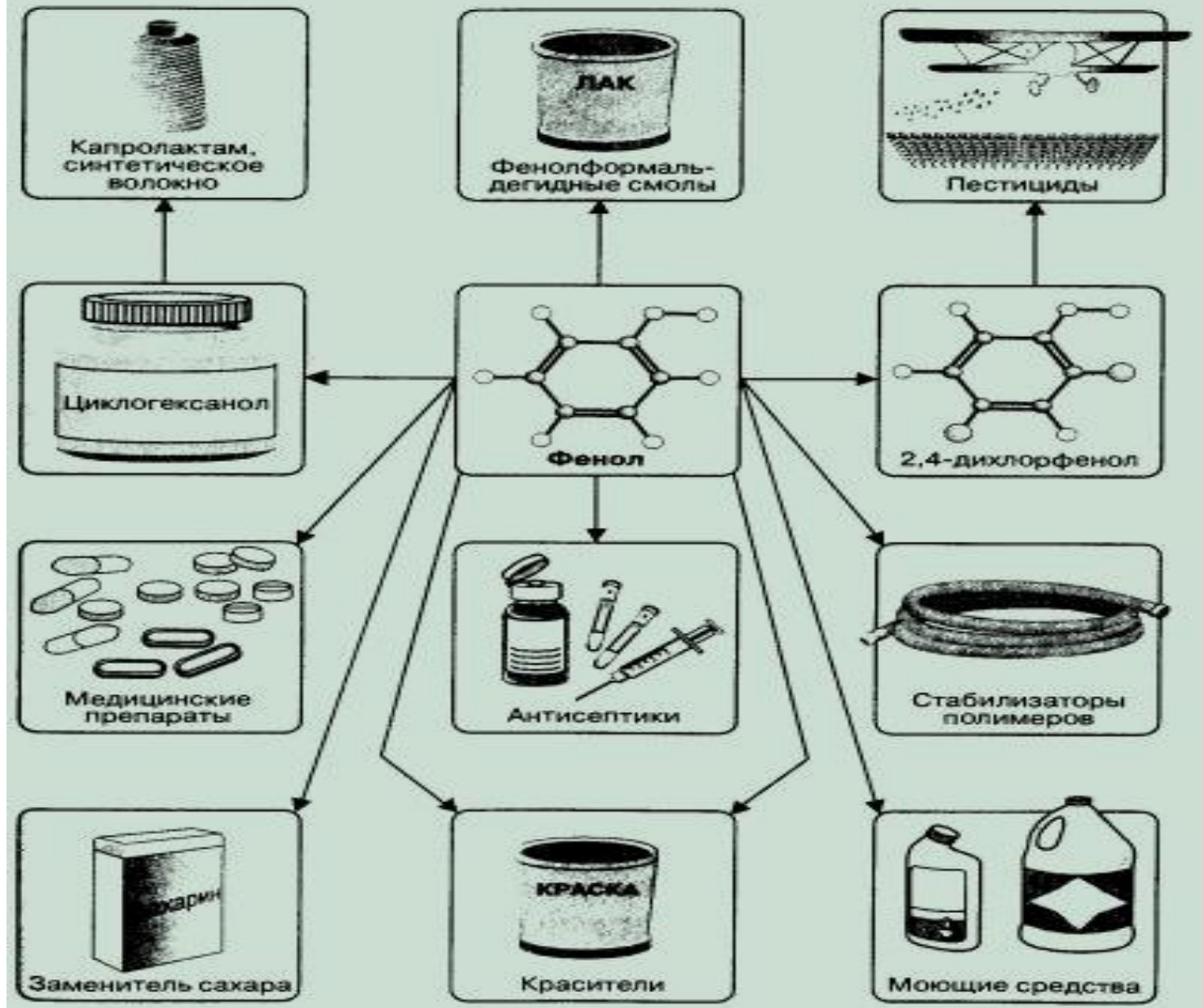
- Fenol molekulasidagi atomlarning o'zaro ta'siri haqida qanday xulosaga kelish mumkin?

Fenil guruhi C_6H_5- va gidroksil guruhi $-OH$ o'zaro bir – biriga ra'sir qiladi.



Fenolning qo'llanilishi

Схема 8. Применение фенола



Fenol birikmalarining biologik roli

Ijibiy	Salbiy (zaharli ta'siri)
<ul style="list-style-type: none">• Dori vositalari (purgen, parasetamol)• Antiseptiklar (3-5 % karbol kislota eritmasi)• Efir moylari (kichli baktrisid va viruslarga qarshi xossalarga, immun tizimini stimullashtiradi, arterial bosimni oshiradi – ukropdagi anitol, fenxel, anis – karvakrol va chabresdagi timol - gvozdikadagi evgenol, bazilik/)• Flavonoidlar (organizmdan radioaktiv moddalarni chiqishiga yordam beradi)	<ul style="list-style-type: none">• fenolformal'degid smolasi• pestidsidlar, gerbidsidlar, insektisidlar• Suvlarni fenollar chiqitlari bilan ifloslanishi